

*United States Court of Appeals  
for the Second Circuit*



**TRANSCRIPT**



APPEAL

**75-6068**

PETITION

**75-4164**

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**United States Court of Appeals**

FOR THE SECOND CIRCUIT

SUN ENTERPRISES, LTD., SOUTHERN NEW YORK FISH AND GAME  
ASSOCIATION, INC., LYMAN E. KIPP, RICHARD E. HOMAN, NO  
BOTTOM MARSH and BROWN BROOK,

*Plaintiffs-Appellants,  
—against—*

RUSSELL E. TRAIN, *et al.*

[“Federal Defendants”],

*Defendants-Appellees, and*

HERITAGE HILLS OF WESTCHESTER, *et al.*

[“Private Defendants”],

*Intervenors.*

SUN ENTERPRISES, LTD., SOUTHERN NEW YORK FISH AND GAME  
ASSOCIATION, INC., LYMAN E. KIPP, RICHARD E. HOMAN, NO  
BOTTOM MARSH and BROWN BROOK,

*Petitioners,*

*—against—*

ADMINISTRATOR OF THE U. S. ENVIRONMENTAL  
PROTECTION AGENCY, RUSSELL E. TRAIN,

*Respondent, and*

HERITAGE HILLS OF WESTCHESTER, *et al.*

*Intervenors.*

**Appeal from the U. S. District Court for the Southern  
District of New York**

**Petition to Review Order of U. S. Environmental  
Protection Agency**

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**TRANSCRIPT OF DEC Hearing, Volume 9 of 9**

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# THE STENOGRAPHIC RECORD

STATE OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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In the Matter

of

Application of HENRY PAPARAZZO and CURTIS  
McGANN (HERITAGE HILLS) for the acquisition  
of a source of water supply, etc.

---

Somers, New York  
October 10th, 1973

PAULINE E. WILLIMAN  
THOMAS P. FOLEY  
CERTIFIED SHORTHAND REPORTERS  
41 STATE STREET  
ALBANY, N.Y.

PROCEEDINGS

MR. DICKERSON: Good morning,  
ladies and gentlemen.

As you by now are pretty much aware,  
this is a continuation of a hearing before the  
Department of Environmental Conservation in the  
matter of the application of Henry Paparazzo and  
Curtis McGann for various aspects of water supply  
and stream protection applications involving the  
project known as Heritage Hills of Westchester.

Dr. Gidlund, when we broke yesterday,  
if you will -- Dr. Gidlund, you were sworn yesterday.  
You consider yourself still under oath if you would.

ERICK R. GIDLUND,  
recalled as a witness for and in behalf of the  
objectant Kipp, having been previously duly sworn,  
was examined and testified further as follows:

MR. DICKERSON: Mr. Blasi, do you  
wish to cross-examine now?

MR. BLASI: Yes, sir.

## CROSS-EXAMINATION

BY MR. BLASI:

Q. Dr. Gidlund, I believe you testified that you and two of your associates formed a firm which was called Environmental Assessment Associates?

A. Actually myself and three associates.

Q. Yourself and three associates, and that was a partnership?

A. No, that's not a partnership.

Q. Is it a corporation?

A. It has been filed as a corporation, yes.

Q. Can you tell me when it was filed?

A. Yesterday, as a matter of fact.

Q. Yesterday. Actually, your function is as a member of the staff of Brooklyn Polytechnic, the old Brooklyn Polytechnic?

A. As I said yesterday, it is a merger of the old N.Y.U. School of Engineering and Science and the old Polytechnic Institute of Brooklyn which is now known as the Polytechnic Institute of New York.

Q. So you're a member of the academic staff?

A. That's right.

Q. Is that a correct statement?

A. It is, absolutely.

Q. And these other gentlemen are members of other academic staffs?

A. Two of them are also with PINY --

Q. Just a minute, I didn't get that.

A. Two of them are with PINY, Polytechnic Institute of New York, and one of them is with NYU.

Q. Yes, so that this enterprise has been formed in the sense of deriving other sources of income other than the stipends and the remunerations --

A. That's one of the aspects, yes.

Q. I believe that you said that you met Mr. Kipp on September 23rd?

A. That's correct, yes.

Q. And that was a Sunday morning, right?

A. That's right.

Q. Did Mr. Kipp tell you that there was a notice of hearing that had been published by the Department of Environmental Conservation in this matter?

A. I don't believe he mentioned that.

Q. Did he show you the notice of hearing?

A. On Sunday you mean?

Q. Yes.

A. No.

Q. Did you know that the hearings were already in progress on September 17th, 1973?

A. On September 17th, 1973 I did not know that Somers existed.

Q. But on September 23rd did you know that this hearing before Mr. Dickerson was already well under way?

MR. FLORENCE: Objection to the characterization.

MR. BLASI: It wasn't? It really wasn't well under way?

MR. FLORENCE: Conclusory statement.

MR. DICKERSON: Well, let's spot the word "well" and continue.

MR. BLASI: I'll rephrase it.

THE WITNESS: Yes, I was.

MR. FLORENCE: Let him ask you.

BY MR. BLASI:

Q. Let me put it to you this way. Let me put it very simply. Let me put it simply: Did Mr. Kipp tell you that there were sessions going on September 17th, 18th, 19th?

A. I --I don't think he mentioned any dates at all.

Q. Did he tell you that he was opposing the application of Henry Paparazzo and Curtis McGann?

A. No, he didn't say he was opposing it.

Q. Did he tell you he wanted to hire you as an expert witness?

A. Yes.

Q. On whose behalf were you to testify?

A. Mr. Kipp's behalf.

Q. Now then, you made some tests?

A. Yes.

Q. If I believe I'm reading back to your testimony correctly, you made them on the -- a few on the 23rd?

A. There were nineteen samples taken on the 23rd, right.

Q. And then you came back on the 29th?

A. There were 24 taken on the 29th.

Q. And then you came back on October 6th?

A. And there were, I think, four sites sampled on October 6th.

Q. Were you ready to testify on October 5th?

A. Yeah, I could have testified on October 5th.

Q. Now, when you were engaged were you advised that the

Town of Somers had adopted an amendment to the zoning ordinance known as the Designed Residential Development?

A. No.

Q. Did you know that the firm of Frederick P. Clark Associates, planners, had been engaged in the enactment of the -- in assisting in the enactment, the consideration of this designed residential development?

A. No, I --

MR. FLORENCE: Objection, irrelevant.

This isn't cross-examination that has anything to do with the testimony of Dr. Gidlund, it should have something to do with it, just anything.

MR. DICKERSON: I have been allowing a little latitude to all parties in the cross-examination. I will continue to do so but in this case, the witness has already answered. The objection is moot.

Q. Is it a fair statement, Doctor, to state that you were not familiar with any of the studies that were made by the Town Planners?

A. For the Town of Somers?

Q. Yes.

A. That's correct.

Q. Now, Doctor, may I ask you to just look at this map --

MR. DICKERSON: Let the record indicate that Mr. Blasi is referring to the enlarged or blown-up portrayal of Exhibit 48.

(Continued on page 1390)

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(Erick R. Gidlund)

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BY MR. BLASI: (Continuing)

Q. I believe you testified that on the morning of September 23rd, Mr. Kipp drove you around in his automobile and took you to various places including taking you up to Warren Street?

A. That's right.

Q. Did you observe that there was some construction going on the westerly side of Warren Street in the area generally known as the Crane Estate? Does that name mean anything to you?

A. No.

Q. May I indicate to you the area just north of Route 202 and the Somers Central School? Did you notice that area up there?

A. No.

Q. And as you look at that map do you see the construction of several houses?

A. Yes.

Q. And it's a subdivision of houses?

A. I see two houses, three houses.

Q. And do you see that some of the ground cover, the area has been removed there?

A. Yes.

Q. Now, Doctor, you may be seated. I don't want to keep you standing up. Are you familiar with the Billingsley Shopping Center which is in the course of construction on Route 100?

A. Never heard of it.

Q. Do you know that in connection -- I'll withdraw the question. Did you observe any construction on the westerly side of Route 100?

A. Yes.

Q. In the proximity of Sun Enterprise property on the west side of Route 100?

A. Yes, it's near the property, yes.

Q. Do you know the construction, I mean, in back of the church, did you notice a beautiful white church on the west side of Route 100 as you drove up?

MR. FLORENCE: I think the answer has already been made that he already observed construction.

MR. DICKERSON: Can we refer to a map reference. If you want to refine the location

--

MR. BLASI: Yes, I think it might be well. It might be on the map on the wall.

MR. DICKERSON: Or Exhibit 23 may come out of retirement.

MR. BLASI: I don't know whether the geodetic shows it so well. Yes, it does.

BY MR. BLASI: (Continuing)

Q. Dr. Gidlund, I show you Exhibit 23 and ask you if this would assist you in locating the construction which is on the west side of Route 100 north of the Kipp property?

A. As I recall it, it's somewhere right in here (indicating).

Q. Would you mark it?

MR. DICKERSON: What color would be most appropriate?

MR. BLASI: Black would be lovely.

BY MR. BLASI:

Q. Would you mark there where you observed the construction?

A. (Witness complies.)

Q. It's marked with an "X". Did you notice the size of that area?

A. It's a substantial construction, yes.

Q. And in the course of that construction the

ground cover has been removed, has it not?

A. Yes.

Q. So that the soil is exposed?

A. Yes.

Q. Similarly to the exposure of the soil at the west side of Warren Street?

A. Yes.

Q. Now, Dr. Gidlund, is it a fair statement that in the course of any construction on the occasion of precipitation that there would be some runoff?

A. Yes.

Q. And if there is no attempt to replace that exposure, I believe you testified, not this particular exposure, I am speaking hypothetically now, if there is no attempt to retrace where ground cover has been removed, that it might possibly have an effect on flows of water?

A. I do not recall that statement. I'm not really sure what you are getting at. If you could clarify your statement perhaps.

Q. The Billingsley Shopping Center will be covered with blacktop in front of it. Isn't it normal for a shopping center to have a parking lot?

MR. FLORENCE: I'd say that the question more than likely is inaccurate and also improper at this point.

MR. BLASI: It calls for a conclusion. I'm asking him a hypothetical question.

BY MR. BLASI:

Q. Assume that the Billingsley Shopping Center which is commonplace for shopping centers, but assuming a shopping center is covered with blacktop, there would be then a removal of an area as you would refer to of infiltration, am I correct?

A. You would replace a permeable area with an impermeable area.

Q. Now looking back at the map, the photograph which is Exhibit -- the enlarged Exhibit 48, without standing up, Doctor, you might turn your head if you would; is there not a considerable area presently exposed with no cover on it, plant covering on it?

A. You mean to the bottom?

Q. Yes, and there are other areas -- look to the west of that exhibit, do you see some areas that are also not covered?

A. Yes.

Q. Now, looking at the pond on Exhibit 48, Doctor, I

would like you to compare that if you would with the pond on Exhibit 46, Pond X, would you mind stepping up here, Doctor. Do you observe the pond marked Pond X there?

A. Yes.

Q. Do you observe the shape of it?

A. Yes.

Q. Now, would you look at Exhibit 48, is not the shape of the pond in that photograph different from the shape of the pond in the other exhibit?

A. Yes.

Q. And on the bottom of that pond those two arms that exist on the pond on Exhibit 48, did you observe whether there were any indications of excavations?

A. In those areas?

Q. Yes.

A. No.

Q. Did you observe any condition of excavation on the west of the arms, - I'm calling it the arm, on the left?

A. Yes, I know what you are calling it.

Q. Did you observe excavations there?

A. No, I did not.

Q. Did you observe that there were excavations going on, a gravel operation going on, on the property?

A. There was evidence of excavation. The day I was there there was no activity.

Q. That was a Sunday, wasn't it?

A. That's right.

Q. Did you notice any trucks parked there?

A. Yes.

Q. Did Mr. Kipp tell you that he was in the gravel operating business?

MR. FLORENCE: Objection.

MR. BLASI: Why?

MR. FLORENCE: What's that got to do with the relevance of the direct testimony.

MR. BLASI: I'm trying to show the soil conditions downstream and the basis of all these tests he said he made.

MR. FLORENCE: Ask him the condition of the soil.

MR. BLASI: No, no, I can ask him any question I wan. You are not going to tell me what to ask him. I respect you and admire you, but I am not going to let you handle my cross-examination.

MR. DICKERSON: That issue, Mr. Florence, has already been brought out in previous testimony. I am going to allow the witness to answer it.

A. (Continuing) No, he did not.

BY MR. BLASI: (Continuing)

Q. But you saw the gravel and equipment and trucks there?

A. Yes.

Q. Now, in your -- I will withdraw that. You actually do not know the precise details of the construction of the Heritage Hills of Westchester?

A. Do I know the plans?

Q. Yes.

A. No.

MR. BLASI: No further questions.

MR. DICKERSON: Any redirect,

Mr. Florence?

#### REDIRECT EXAMINATION

BY MR. FLORENCE:

Q. Do you have an opinion as to the relative effect upon the Brown Brook of the 837 acres, the 917 acres in this application, vis-a-vis the two projects that Mr. Blasi pointed out on cross-

examination?

MR. BLASI: Now, I am going to object to the question because he said he does not know the details.

MR. DICKERSON: I am going to permit Mr. Florence to try to rephrase that question a little bit. The Heritage Hills project? The two projects? Pin it down a little bit, please.

BY MR. FLORENCE: (Continuing)

Q. Do you have any opinion as to the effect upon the Brown Brook of the property of the Heritage Hills application involved in this application outlined on Exhibit 45 in black, vis-a-vis the two subjects of Mr. Blasi's cross-examination, namely the two houses or so on Crane Road or Crane Estates and the area of the shopping, proposed shopping site on the west side of Route 100?

MR. BLASI: He didn't even know they were there. I am going to object to the question.

MR. DICKERSON: I am going to let him answer the question, Mr. Blasi. It's a lot simpler to answer his question than go through five

more questions. I think we have got the drift of Mr. Florence's question in that frame and I'm going to allow the witness to answer.

A. (Continuing) Assuming the same degree of development in terms of ground cover removal for the Heritage Hills and for the two sites you have mentioned, the simple fact that the acreage involved is vastly different would mean that the Heritage Hills Development would have a much greater impact on the Brown Brook.

MR. DICKERSON: Any other questions of this witness?

RECROSS EXAMINATION

BY MR. BLASI:

Q. Doctor, you don't really know, do you, the impact at this point of any drainage relating to Heritage Hills or any other; that is an opinion which you have expressed without the benefit of all this information that you admit you did not have, am I correct?

A. My opinion is based on information that I had, yes.

Q. But you have not taken into consideration naturally,

(Erick R. Gidlund)

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the information you do not have?

A. Naturally.

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(Erick R. Gidlund)

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MR. BLASI: All right. Now --

MR. FLORENCE: I would concede that.

MR. BLASI: Just a minute, just a  
minute.

BY MR. BLASI:

Q. Now, you've spent, you and your associates, have spent  
all of three days after the commencement of this  
hearing to appear before this Hearing Officer?

A. Well, we spent a good deal more than three days  
but we spent that.

Q. But you applied yourselves to three days as your  
testimony indicates. You came to this site three  
days, am I correct?

A. We were here three days, yes.

MR. BLASI: No further questions.

MR. DICKERSON: Dr. Gidlund, just to  
clear up a couple points, on the 23rd of September  
you took 19 samples or you sampled at 19 spots?

THE WITNESS: No, we sampled 19 -- 19 --

MR. DICKERSON: Locations?

THE WITNESS: Well, I think it was --  
some types of samples were top and bottom so when I  
speak of samples, I'm talking about top and bottom.

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(Erick R. Gidlund)

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MR. DICKERSON: That is all I want to clarify.

THE WITNESS: So the sites, the total number of sites was, oh, I believe, 14. Some of them were top and bottom.

MR. DICKERSON: O.K.

THE WITNESS: So they were --

MR. DICKERSON: On the 23rd was 14 sites and 19 samples?

THE WITNESS: Right.

MR. FLORENCE: I think we'll clear that up also, Mr. Examiner, on the --

MR. DICKERSON: O.K. On the 29th you said 24 samples?

THE WITNESS: But there were 17 sites, I believe.

MR. DICKERSON: 17 sites, and you indicated on the 6th of October four sites?

THE WITNESS: Yes.

MR. DICKERSON: Was that four samples also, or more?

THE WITNESS: No, when you talk of samples now, you're talking of a test now, pH or

temperature or something like that?

MR. DICKERSON: No, grab samples, jugs, whatever you want. I realize that with any one container you can run several tests from the samples contained therein.

THE WITNESS: Four samples, yes.

MR. DICKERSON: All right, that's what I'm getting at. I recognize the top and bottom sampling and things like that.

THE WITNESS: Yes.

MR. DICKERSON: But 19 samples does not make 19 different places in geographic location.

THE WITNESS: No.

MR. DICKERSON: You're excused, thank you.

THE WITNESS: Thank you.

(Whereupon the witness was excused.)

MR. BLASI: How many more -- excuse me. How many more witnesses do you have?

MR. FLORENCE: This is it.

MR. BLASI: O.K. Go ahead.

MR. FLORENCE: Mr. -- or Dr. Cardenas, please.

RAOUL R. CARDENAS, JR.,

called as a witness for and in behalf of the objectant Kipp, having been first duly sworn, was examined and testified as follows:

MR. DICKERSON: Would you be seated, state your name, address and association.

THE WITNESS: My name is Raoul R. Cardenas, Jr., C-A-R-D-E-N-A-S. I'm an Assistant Professor of Civil Engineering at Polytechnic Institute of New York. I'm an associate of Environmental Assessment Associates in Tappan, New York. I reside in Tappan, New York, at 66 Pine Tree Lane.

DIRECT EXAMINATION

BY MR. FLORENCE:

Q. O.K. Just say you live in Tappan, New York.

A. I live in Tappan, New York.

Q. Dr. Cardenas, have you prepared a resumé of your education and experience as it relates to the testimony that you're about to present at this hearing?

A. I have. It's not specifically prepared for this session. It is a general academic type of vita.

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(Raoul R. Cardenas, Jr.)

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MR. BLASI: Are you going to mark it for identification.

MR. FLORENCE: Yes, I will. Now,  
Doctor, --

MR. DICKERSON: Exhibit 50 for identification is a resumé of Dr. Raoul Cardenas.

(The resumé of Dr. Raoul Cardenas was marked for identification as Exhibit No. 50, this date.)

BY MR. FLORENCE:

Q. Now, Doctor, if I were to ask you questions in relation to the information which you placed upon that, would your information be the same as are prepared here?

A. Yes, they would be.

MR. BLASI: All right.

Now, may I see that, please?

MR. FLORENCE: Yes.

MR. DICKERSON: Let's take a break for a second.

(Whereupon a short recess was taken.)

MR. DICKERSON: O.K., ladies and gentlemen. Mr. Florence.

MR. FLORENCE: Can we have the question, if I asked one?

(The record was read by the reporter.)

MR. FLORENCE: All right, I offer the resumé in evidence.

MR. BLASI: What's that?

MR. FLORENCE: The tender of the resumé.

MR. BLASI: No --

MR. DICKERSON: Are there any objections to the receipt of Exhibit 50, the resumé of Dr. Cardenas, in evidence?

No objections, Exhibit 50 is received into evidence.

(Exhibit No. 50 previously marked for identification was received in evidence, this date.)

Q. Dr. Cardenas, did there come a time when you had -- when you inspected the area of the Brown Brook to the south of the parcel of Heritage Hills which is outlined on Exhibit 45 in the black pen, Brown Brook running, I believe, thusly (indicating)?

A. Yes, there came a time, I did.

Q. All right. When was the first time that you came upon the site?

A. September 23rd.

Q. And at that time can you tell me essentially what you -- well, let me back up a little bit. Have you prepared a report of the activities that you pursued in the areas in and about the Brown Brook and in the area as it is affected by the three basins in which lie the land of this application?

A. Yes, I did. I would like to back up a little bit there and correct myself. The first time I visited the site was really Saturday, September 22nd. Then I returned September 23rd, carried out a prolonged field visit, returned on September 29th and I may have visited the site intermittently with Mr. Kipp. I then -- we then returned on October 6th and as a result of principally the findings that we obtained on -- from the samplings on September 23rd and September 29th, a report summary of the findings was prepared which you are handling there. The October 6th findings were incorporated in the final tape of that.

MR. FLORENCE: I would ask if we

could mark that for identification.

MR. DICKERSON: For identification --

MR. FLORENCE: And I would then have the doctor read the report.

MR. DICKERSON: Well, first of all, speak up. Secondly give me a minute, please.

MR. FLORENCE: Sure.

MR. DICKERSON: For identification, Exhibit 51, a document of some 18 pages entitled "Water Quality Testing for Sun Enterprises Limited, Somers, New York, September 23rd-October 6th, 1973." Beneath that, "Environmental Assessment Associates, Tappan, New York."

(The report described above was marked for identification as Exhibit No. 51, this date.)

MR. BLASI: Now, Mr. Examiner, we would like to see this exhibit before Dr. Cardenas testifies so that we may properly evaluate the question of what, if any, objections are to be made to any questions relating to his testimony and as to any matters which are encompassed in his report which may not be within the scope of this hearing.

MR. DICKERSON: Mr. Florence, you

had started to request that Dr. Cardenas read that report.

MR. FLORENCE: Yes.

MR. BLASI: Yes.

MR. FLORENCE: I could do it another way to avoid that factor. I could simply ask him questions as to the background and then the testing, the consideration of the consequences, his field investigation and continuing to go through it. However, I was doing this in the sense that Mr. McPhee and some of the other experts earlier had simply read their reports.

MR. BLASI: Yes, but their reports were within the scope of the inquiry.

MR. DICKERSON: If I may be -- gentlemen.

MR. FLORENCE: That's a conclusion.

MR. DICKERSON: I believe Mr. McPhee and the other witnesses read their prepared statements and their reports of this length and longer and some shorter were submitted as exhibits.

MR. BLASI: Yes.

MR. DICKERSON: I would suggest that,

first, we take a five- or ten-minute break for Mr. Blasi to examine this document. I would suggest that it not be read fully into the record but be submitted as an exhibit when the proper document or groundwork has been laid and, thirdly, that instead of reading the entire report, that it be summarized.

MR. FLORENCE: I'll do that.

MR. BLASI: Are we -- are you stating, Mr. Hearing Officer, that it will remain marked simply for identification?

MR. DICKERSON: At this moment. I will give you time to examine it.

MR. BLASI: Yes.

MR. DICKERSON: And then in either case, I would suggest that instead of having it read into the record verbatim and in toto, that it be submitted as an exhibit if groundwork is laid for it and that a summary of it be presented for the public here, rather than re-reading all 18 pages plus tables on this.

MR. BLASI: Just as long as the record indicates that I'm reserving whatever

(Raoul R. Cardenas, Jr )

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objections the applicant may deem appropriate.

MR. DICKERSON: I'm simply deferring that for about ten minutes if we can break until about a quarter of, or as soon as you can look at that.

(Whereupon a short recess was taken.)

(Continued on page 1411)

## DIRECT EXAMINATION

BY MR. FLORENCE: (Continued)

Q. Dr. Cardenas, could you explain after your visit on September 22, 1973 what you did and what the object of your observations was?

A. On September 22 which was a Saturday I met with Mr. Kipp after having spoken with him on the telephone for the purpose of investigating the possibility of a water quality testing on his property, his motivation being this hearing that we are now engaged in. We had been involved in a lake study or two before and had done water quality studies before; had a group that was into this area. At that time I discussed the general problem with Mr. Kipp and realized that time was very valuable here. We had actually come in quite late into this affair. I had to organize immediately a field expedition for that next day, for Sunday, and contact Dr. Gidlund and get my group out there and make arrangements for samplings and analyses and so on.

At that time we talked and I told him we could test the water on his property and at the

margins of the property and we would call the shots as we saw them. We would write an evaluation of what we had seen within the framework of the time constraints that we had and that he may not be pleased with what he reads in the final report, but that was the constraints of our relationship.

Q. Now, did you ever have an opportunity to read the proposal with respect to the waste water report of Mr. McPhee or to see any of the information?

A. Yes, I did see it later.

Q. Are you familiar with --

MR. BLASI: May I ask when? "Later" is vague.

THE WITNESS: Shall I answer?

BY MR. FLORENCE:

Q. I'll ask the question just to be useful. Your best approximation if you don't know precisely, when it was you saw the report. However, I say this is generally proper for cross-examination.

MR. BLASI: It's also proper as an objection.

MR. DICKERSON: I think we are going to get around this particular point by having the

witness answer to the best of his recollection.

A. (Continuing) To the best of my recollection it was the latter part of September, the 27th, '8th, '9th; after the 23rd sampling period.

BY MR. FLORENCE:

Q. Dr. Cardenas, what did you do in the way of background study in the preparation of this report which you have made, and I refer you to page No. 1.

A. Page No. 1. I obtained the information from Mr. Kipp and from some newspaper clippings that were given to me and from making inquiries of my own, later modified by this report here, that Mr. McPhee has prepared and summarized the situation essentially as we saw it as pertaining to our particular testing program. Wrote a general description of which appears in the background; prepared a field drawing based upon a map that was given to us by Mr. Kipp and modified by ourselves. Hence we did call it a field sketch. It is a working sketch, it is not intended to be a definitive geographic delineation of that area.

Q. Now, in relation to that field sketch, can you tell us what the numerical indications represent?

A. Yes. There is a field sketch that follows page 1 that shows sampling sites for the property north and south of Sun Enterprises Limited. The samplings actually began initially north of Highway 202 and after they did the third sampling we had to add two additional sampling sites, but essentially they were intended to define the qualities of the waters in and around the Kipp property. We concentrated on the ponds and the streams and the brook as it became more consolidated to the southern end of the property and after it left the property down crossing Highway 100.

Q. Now, did you make any -- let me ask you this: did you physically walk the area involved in the Brown Brook or in relation to the Brown Brook?

A. I did physically together with Professor Gidlund, I walked all of this area and drove part of it and collected many of these samples myself.

Q. Now what was the study now and when I refer to the study I don't mean the results, but how did you define that which your objective was in this case?

A. We, having visited the area and seen the limits of the aquatic system and the situation that was

involved, there were ponds, there were wetlands, there was a meandering stream. Having become aware of the approximate size of the discharge for Heritage Hills, we then identified sampling sites, decided which parameters -- which tests would be significant to use to tell us the quality of the water; decided that there were certain relationships with dissolved oxygen. We wished to know nutrient budgets and microbial population which would help us to define this water quality. We thought that the pond would have some significance so we went over it in terms of evaluating a pond or a lake in terms of top-bottom samples and then did an analysis. Professor Gidlund was with us.

Our field crews were equipped with flow meters, metering devices for water.

MR. BLASI: Excuse me, Mr. Examiner. This gentleman speaks very rapidly and I wish to at this point interpose an objection as to any reference to water quality as not being one of the matters or issues within the scope of this hearing before this Examiner.

MR. DICKERSON: Mr. Blasi, I'm going to

allow Mr. Florence the same latitude I allowed you as far as the presentation of his case. We know what the limits and what the evaluation of this hearing will be. We don't expect to continue for all day with this witness. I would think that without too much presumption on my part he is trying to lay a basis for a section of the stream on the Kipp property. I am going to allow him to continue.

MR. BLASI: I have noted my objection.

MR. DICKERSON: For the record, your objection is noted.

BY MR. FLORENCE:

Q. My train of thought was broken. Can you pick up or have you lost it; your train of thought?

MR. DICKERSON: Would it be simpler if it were read back?

MR. FLORENCE: I'll ask you this question.

Q. What questions did you pose for yourselves that you sought to answer as a consequence of the activities that you pursued?

A. I thought from discussion and a feeling for the questions that were involved that the important

questions that would be significant summarized on page 2 of the report are the present water quality condition of the Sun Enterprises property, the flows that can be expected in the Brown Brook system; the water quality that can be expected from the waste water discharge and finally the effect of the waste water discharge from Heritage Hills development on the Sun Enterprises property.

Our approach was a team approach. We are principally professors. The school encourages one day a week consulting and this is part of our activity there. And we had a team, people who are in my own areas, water quality and microbiology, Professor Gidlund was hydrology and Professor Molof was sanitary engineering and water treatment, and certainly, these questions were within the scope of our expertise and capability.

Q. What did you do with respect to a field investigation in that regard?

A. Well, we went into the field, made two large sampling visits and by that I mean took the water samples that Professor Gidlund referred to earlier, and then on the 29th we returned again a week later and the

summary is on page 3. It says in all 19 samples were collected on the first site visit and 24 on the second. For ponds, we tried to collect top and bottom samples. We determined flows and Professor Gidlund examined the United States Geodetic Survey maps.

Q. In relation to the collection of the samples and their analyses, can you tell us those things which you examined for and then ultimately I will lead you to the significance of the results of that examination, bearing in mind first what you were testing for and the techniques, if you care to just briefly touch on that.

A. Techniques that we used in collecting our samples are techniques of our own that are taken from the method that's recommended for water and waste water engineering people or people that are involved in water quality evaluation, stated in Standard Methods for the Examination of Water and Waste Water. It's a standard text; in fact, it's put out by the major societies involved with water pollution work and American Public Health Association, American Water Works Association and the Water Pollution Control

Association. The same techniques as the ASTM. We collected them and they are given here, but I shall summarize them. We are interested very much in dissolved oxygen. We must use a special dissolved oxygen sampling set-up. It's a container that is a piece of heavy metal casing in which a bottle is placed and is lowered to a depth, a defined depth, and we were sampling the ponds about a half a meter below the top, half a meter above the bottom. These samples would be lowered to the appropriate depth and there they would fill up discharging the contents of their liquid.

A separate sample was collected for microbes, for bacteria, specifically. The bacteria I'm talking about here are coliforms, total coliforms and in some instances plate counts or standard plate counts and fecal coliform bacteria. These must be collected in a defined, prescribed way. By that I mean one must use sterile bottles, one must take certain precautions in terms of time before they are analyzed. Technical things that are required for proper water quality testing.

THE WITNESS: (Continuing) A third sample was also taken at the sampling site for chemical parameters. The chemical parameters I have specifically in mind are the nutrients, that is, the principal forms of nitrogen, ammonia, nitrate, principal forms of phosphorus, in terms of total orthophosphate.

We were also interested in other water quality parameters that are summarized on the tables but they are essentially pH, hardness, and we did some physical measurements too in terms of depth, visibility, turbidity, color. We measured temperature at all places because temperature becomes significant insofar as it is much related to dissolved oxygen concentration. We measured alkalinity, hardness, in some instance iron, total solids, the bacteria that I have already noted, standard plate count and coliform bacteria and your closing inquiry, we also -- the physical measurements were taken, for example, for visibility we measured these with a Secchi disc. It's a standard white target that is dropped into a pond or a lake and one measures the disappearance of color when it's

no longer visible, it's a target. Depth is also measured in terms of, in our instances, it's a line that's marked a particular depth which we have measured, drop it to the bottom and are able to visually measure depth.

The temperature measuring gadget is a special gadget too for water studies. It's called a bucket thermometer. It's a thermometer that is designed to hold a sample of water until you get it to the surface so that there won't be any change that will be observed. And a flow meter, a standard flow meter, a small flow meter that's to be operated manually, and we used a ruler and a tape measure in some instances and a calibration curve is used for that flow.

Q. Doctor --

A. A boat was used in many instance. I think that summarizes it.

Q. Doctor, in relation to those tests that you took in the times and the locations, are they, those sample number and map site numbers describing the times and flows as are related in Table 1?

MR. BLASI: Table what?

MR. FLORENCE: Table 1.

A. Table 1, indeed, summarizes the sample sites.

Q. Does Table 2 indicate some of the testing that you did in relation to what you described earlier?

A. Table 1, as you noted, tells the sample numbers that were assigned, the site numbers, on the map, corresponding to the map. A summary of the time that we did this -- carried out this operation and the weather conditions, flows, are shown.

Table 2 begins to summarize our data. Table 2 is for the September 23rd site visit. It continues on page "sample 2 continued." All the parameters did not fit across the top of the page so we had to go to the next page where sample 2 is continued in terms of other parameters and across the top of the page is indicated what they are: pH, nitrate, ammonia and so on. I would note at this point, or I should have before that already, because of the haste, because of the rapidity with which this was prepared, there are a couple of errors in this report. We only finished just typing it last night, in fact. There is no page 14, so that's a typographical error, and the table

appearing at Table 2 and Table 3, which are essentially the same type of parameters, the values for hardness are in error on Table 2. We will submit that in a --

MR. DICKERSON: I think, do you have the corrected figures with you?

THE WITNESS: I don't have it with me. I haven't prepared it for typewritten values, but essentially the hardness values for Table 2, which is the September 23rd site visit, should be doubled, should be doubled.

MR. DICKERSON: Well, do you have sufficient information that you could accurately make a standard of change now?

THE WITNESS: I could, I could do that.

MR. DICKERSON: I think that might save us a whole lot of time.

THE WITNESS: Do it on your copy?

MR. DICKERSON: On the formal exhibit copy and then we'll read it into the record.

MR. FLORENCE: I might -- I do have --

MR. DICKERSON: Let's take a break

for a second.

THE WITNESS: This is because of  
the --

MR. DICKERSON: Who has the one  
that is marked for identification 51?

MR. FLORENCE: I do.

MR. DICKERSON: If you will mark  
it with a blue marker pen on the Exhibit 51 for  
identification and then when you're done, we'll  
read it into the record. Let's go off the record  
for a second.

(Discussion off the record.)

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MR. DICKERSON: Back on the record.  
Dr. Cardenas, you have marked the document that has  
been identified as Exhibit 51 with the corrected  
figures. These are true and accurate figures to  
the best of your knowledge?

THE WITNESS: To the best of my  
knowledge, they are.

MR. DICKERSON: Thank you. That  
saves us a lot of time. Mr. Florence, if you'll  
continue?

MR. FLORENCE: All right.

MR. BLASI: Mr. Examiner, do I have to keep interposing my objection or do I have a continuing objection?

MR. DICKERSON: I would presume that it's continuing. I --

MR. FLORENCE: It's my understanding --

MR. DICKERSON: I reiterate that the determinations will be based on the law and the record. Material in the record that does not directly pertain to those determinations will, of course, not appear in the decision or will be grounds for review. Anything that is not in the record that appears in the decision -- first of all won't happen, but would also be grounds for review. I am going to continue to let Mr. Florence proceed to establish the background of the area. I recognize references have been made to "X" Pond or "The Pond." That may not directly pertain to the downstream area but it's simpler to give Mr. Florence a limited area of freedom in presenting his case and I'm going to continue to do so.

I recall certain testimony hinting

at the relationship between "X" Pond and the stream which will be evaluated very carefully and I don't think I'd want to phrase it any stronger than at this moment "hinting" at it. It was something that is to be considered. I'm going to let him, within the limits that he's gone so far continue along these lines. Your objections are noted. I'm going to give you full and ample opportunity to prepare for cross-examination of this witness and I will very carefully attend to any comments you have to make in your closing statement on these items.

MR. BLASI: I may --

MR. DICKERSON: I think you recognize just as fully as Mr. Florence, the difficulty of the situation because of the new law and we are going to try and work as best we can in an imperfect situation trying to head toward the ideal and I'm going to allow him to continue at this point. Your objection will be formally noted and I will presume it will continue until the end of this witness' testimony.

MR. BLASI: And I respectfully reserve the opportunity for further objections and

comment, Mr. Examiner.

MR. DICKERSON: I noted that, but I think we would best be served to continue the examination and finish with this witness. Depending on the time that occurs, if anyone else has any questions, I would anticipate that your questions -- your cross-examination -- would commence after lunch and that should, I hope, allow you opportunity for adequate preparation. That presumption may be a little early but with that understanding, let's continue.

BY MR. FLORENCE:

Q. Dr. Cardenas, as a consequence or as a result of the information you derived in Tables 1, 2 and 3, did you come to an opinion as to the -- the results that you tabulated in those tables?

A. Yes, I did.

Q. All right, and could you tell us what those results were and what they indicate to you?

A. Yes. They are summarized in the tables as you've stated on Tables 2 and 3 principally. The dissolved oxygen, and I will begin at the top of the property south of the Heritage Hills Development

location and deal with the parameters as they pertain to that geographic siting. Dissolved oxygen values at the upper portion of the Brown Brook, I'm talking about it looking at my --

MR. BLASE: I don't have any report before me so I don't know what he's talking about.

THE WITNESS: I think we could probably refer to it on the map.

MR. DICKERSON: Mr. Oehler, do you have a copy of that? Perhaps Mr. Blasi -- perhaps you could pull up a chair.

THE WITNESS: There's a map that folds out there, Mr. Blasi.

I'm now talking about the upper reaches of the stream, sample points 1, 2 and 3, as it broadens into the pond still north of Highway 202, goes via culvert below Highway 202 into Firemen's Pond, Site 3, and at this point and down into sample Site 5 which -- 4 and 5, essentially the principal channels of the Brown Brook shown there as an intermittent stream, we found dissolved oxygen levels to be below saturation with the exception of point 5, not alarmingly so. At sample point 5,

there was a lower dissolved oxygen saturation shown below 50 percent and we're talking about dissolved oxygen here as being that that a system at equilibrium would naturally come to if it had no demand at all. 100 percent would be clean, absolutely clear, pristine water given enough time to come to equilibrium. Here we have effects of something that is consuming oxygen more exemplified at sample point 5 which is the Brown Brook in the wetlands area. As we move downstream --

End  
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5/3/1

(Raoul R. Cardenas, Jr.)

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MR. DICKERSON: Since I -- may I interrupt for a second, please? Since I don't have the documents in front of me, can you give me an idea of the levels of concentration?

THE WITNESS: Yes, I will. For example, point 5 it was -- dissolved oxygen in terms of reading, milligrams per liter, we're talking about order of magnitude for the upper reaches about 7-1/2 and for the wetlands area we're talking about order of magnitude of 4.5 or .6 is what I actually got.

MR. DICKERSON: Thank you.

THE WITNESS: Then as we go down to the pond itself, we were interested in the pond because it is a wetland and there, to our -- to my satisfaction, I felt that there was a movement of water between the wetlands and that pond. I felt that you could not isolate and separate these systems so we measured the pond at -- at pond "X" as someone referred to it a while ago, as measured at three different sites as the northern part of it, the little outcropping there as 6-A is the sample site. That's the upper right pocket there. Then in the

center of the upper portion of it we have it labeled 6-B and then the lower portion where it begins to widen out, we thought that would reflect the water in the pond itself. There the -- we found values to be in terms of the dissolved oxygen, percent saturation, for example, to be elevated at the top and at the bottom, the bottom sample which would be typical of a bottom sample that was collected in the lower and the middle part of that pond, sample point 6-B indicated to us that at the time that particular moment, there was a dissolved oxygen demand and a saturation value was 14 percent, the real value being 1.3 milligrams per liter.

Q. What date was that, Doctor?

A. This was on September 23rd. This to me, based on observation of lakes, shows that there is some stress in those pond waters. In an enriched lake, a lake that shows signs of enrichment -- and by that I mean, I'm talking about eutrophication, you will find algal activity, especially about this time of the year at the surface and if you proceed into the deeper waters as it stratifies, you will find a demand, a low dissolved oxygen value

which is typical for this system.

As we move on downstream picking up sample point 7, 8, 9, sample point 7 is the pond again, but sample point 8 and 9 which are the enlarged pond just out of the wetlands, we find a dissolved oxygen demand that is also apparent in terms of real values. They're 2.5 milligrams per liter, 4.4 milligrams per liter, showing the effects of enrichment on the system and as one moves downstream of that towards the south of point 10-B which is the southernmost pond, we're already out of or almost out of Mr. Kipp's property, the dissolved oxygen values begin to rise again as a result probably of the flowing waters and they attain higher values at this point than what they were coming in.

Other parameters that we examined here and that are of interest are nitrogen, nutrient values, nitrogen and phosphorus. They are typically for any eastern sector, and this varies on specifically where you are, they are elevated in excess of nutrient levels that are considered to be necessary for algal bloom problems

to occur, and I'm saying that on the basis of investigations that have been done by people who study lakes such as Claire Sawyer, who studied Wisconsin lakes, for example. Phosphate fits in with the same type of pattern. There are a little bit lower values ; I would suspect, earlier in the spring they would be higher but they are adequate for sustaining, encouraging algal growth.

The bacterial levels are elevated at the upper reaches of the Kipp property. They then decrease and since there had been a rainfall the night before we sampled that, we ascribed some of that elevation to surface discharge because there is some construction activity going on at the top.

(Continued on page 1434)

A. (Continuing) Generally from examining the data and backing off and having a broad look at it, looking at both pieces of data that generally fit, it was our feeling that in and around the Sun Enterprises property we picked the picture that we are able to piece together as that of a marginal brook system with elevated bacterial levels.

It shows signs of an enriched wetlands and a moderately eutrophic pond and to this we note that Heritage Hills will be discharging filtered secondary sewage effluent and filtered secondary effluent will contain nutrients, will contain nitrogen in the form of ammonia or nitrate depending on how much aeration takes place. It will contain some phosphorus depending on the level of treatment that is to be imposed. Ammonia, if it is not oxidized will exert a severe dissolved oxygen depletion in the receiving water. Ammonia sucks up, to put it in lay language, dissolved oxygen when it is discharged in its oxidation and in fact molecule per molecule, nitrogen requires more oxygen than carbon. The nitrogen besides being oxidized and consuming oxygen that is

already, that is not already but shows some oxygen demand, will be further stressed. The ammonia or the nitrate can serve as a nutrient for an already enriched wetlands system serving to give it additional nutrient sources for the growth of algae, especially algae, and bacteria.

The stream flow which was Dr. Gidlund's concern, just from talking to Dr. Gidlund -- Dr. Gidlund ran work on this part -- the stream flow is reasonably low. Certainly it may be doubled by the input of the discharged effluent and that discharged effluent will contain in it, the nutrients I have noted, ammonia, nitrate and phosphorus. In addition there will be other carbon-containing components. There will be some solid material that will settle in the system, form sediment. There may be some chlorinated compounds that will result. There may be, -- there certainly would be the results of surface runoff which would also carry some nutrients with it. This will go into the system and further augment, and further enrich, a system that is already enriched and further stress a lake or a pond I should say, that is already showing signs of

eutrophication.

I am convinced to my satisfaction in a meandering stream like this, a meandering brook where wetlands are present, that this water will eventually find its way into this Pond "X", and that it will be disbursed, generally disseminated throughout the wetlands area and that the water quality will be affected of the property, the water of the property of Sun Enterprises on this map.

I think probably I have had most of the points. More specifically, what we are talking about is an acceleration of the eutrophication, of the process -- of the enrichment process. I will get to the details of the report as to what the sequence in which this process occurs and that is, there is a stimulation of microbial growth, the microbes grow, in response to the available nutrients. If there is a great stimulation of growth, a "bloom" as we call it, sometimes when it's very rapid, the microbes exhaust their nutrients and take them all in their tissues and die, they simply fall to the bottom of the system and there die and serve as nutrient sources for other micro-organisms.

Bacteria many times follow in the heels of this; bacterial growth which consumes oxygen which may have been in the form of algae and many times you get pockets of very rich, very luxurios growth where dissolved oxygen is removed completely and then you begin to change the character of the system and you go from an aerobic, reasonably stable system where there are few plants to an anaerobic one where you have a depleted oxygen in certain areas and this oxygen depletion leads to a metabolic end product that is distressing in that sulphides are formed many times, quite often, in fact, and the sulphides themselves besides being odorous are quite reactive, they react with organic compounds to form ~~end~~ metabolism compounds of the kinds such as mercaptans and thio compounds, sulphur-containing compounds. They are quite odorous. The sulphides themselves produce or form dark sediments typical of the systems that suffer oxygen depletion. This is nothing unusual.

We get a bottom sediment that can be dark. We get odor problems that can result, microbial stimulation that can result in scum and this type of situation, and of course weed growth

will be stimulated very likely along the borders of this pond in excess of what's already there. That is my personal observation.

Summarizing --

Q. Let me ask you before you get to summarizing, did you make an examination of the nature of the soil on the edge of the lake or in the area of "X" Pond rather than the wetlands that surround it and if you have an observation, what is it?

A. I will base -- I am not a man who is versed in hydrology. From talking with Professor Gidlund, who is, and knows soils, it is my understanding that this water will not be held in the soil where it will be discharged to the upper portion of the wetlands and it will migrate through the soil, percolate and eventually reach the pond area, be generally disseminated through the upper portion of that Sun Enterprises property.

Q. Would there be any effect upon the compounds which would be introduced by effluent through the process of percolation?

A. There could be an effect. The compounds that will be contained in the effluent are definitely

microbial stimulating. Whether there would be any plugging or not, I would have to refer to someone who knows that particular aspect of it. There would certainly be additional microbial growth that one must contend with.

Q. All right. Have you based on, rather - what you have tested and on the information you have just given us, do you have opinions as to the study that you undertook as to the effect on Brown Brook of the proposal to put a waste water sewage outflow structure into the Brown Brook on the south side of Route 202?

A. Yes, I do. They are summarized on page 17 of the report and I shall read portions of that. I may preface it by saying that based on two samples of the water quality of the Brown Brook system taken on September 23rd and the 29th of 1973, a hydrological examination of the area, and a consideration of the proposed effluent discharge, the following observations can be made: 1. The treated waste water to be discharged by Heritage Hills Development to the Brown Brook will more than double the dry weather flow, increase the peak

sewage flow, and during periods of no or little flow, essentially consists of the entire flow.

2. The treated discharge water to Brown Brook will not remain within the bounds of the Brown Brook and will become disbursed throughout the upper portion of the Sun Enterprises property, namely the wetlands area.

3. The discharged water will also reach the large pond, Pond "X", and subsequently the underground, potable water supply. I did not note, but this serves as a water source for the structures that adjoin Highway 100 on that property.

4. Based on a consideration of the expected quality of the effluent discharge and the water quality of the Brown Brook system, the following are presented on a semi-quantitative basis:

a. The wetlands will be affected negatively because of inputs of nitrogen and phosphorus nutrients as well as carbon and chlorine-containing compounds.

b. Eutrophication will be

accelerated in the pond, designated by sample sites 6 and 7 leading to its deterioration, and

c. The underground water quality will be affected.

These opinions were put together as a result of discussions with my associates in the particular areas that I have referred to earlier.

Q. Would it be fair to say then that the introduction into this stream of waste will result in an adverse effect upon the Brown Brook?

MR. BLASI: I object to the question. He has already testified as to what his findings are. Characterizing them as "adverse", that's a matter beyond --

MR. DICKERSON: Rephrase the question as to what his opinion is on the subject, please.

BY MR. FLORENCE: (Continuing)

Q. Do you have an opinion upon the effect of the Brown Brook of the introduction of waste water from a proposed sewage plant on the south side of Route 202?

MR. BLASI: Now, I interpose the objection of the sewage plant, the same objection

I made before, only enlarged.

MR. DICKERSON: I am going to ask a question, trying to split both hairs. Do you have an opinion of the effect, first of all, of the construction by itself of the sewage effluent discharge structure on the stream?

THE WITNESS: Not with regard to the structure, no.

MR. DICKERSON: Do you have an opinion on the effect of its use?

THE WITNESS: Its use is to be used to deliver tertiary or filtered secondary treated sewage. It will lead into the pond, Firemen's Pond. The results of that discharge flow considering the nutrients, considering the nutrients specifically and the character of that, I would expect of that waste water from the process that's been described in this report by Mr. McPhee, it is my feeling that it will affect the upper reaches of that system, the Sun Enterprises.

MR. DICKERSON: Off the record.

(Discussion off the record.)

MR. DICKERSON: Let's go back on

the record, please.

MR. FLORENCE: You may inquire,  
Mr. Blasi.

MR. DICKERSON: I presume you would  
like some time.

MR. BLASI: Yes, sir.

MR. DICKERSON: All right, first  
we have got two items; does anybody else have any  
questions of this witness?

MR. VAZZANA: We shall have some  
questions.

MR. DICKERSON: Can we use the  
next 15 minutes by anybody for any questions?

Mr. Alexander, do you have any questions?

MR. ALEXANDER: Not yet.

MR. DICKERSON: Maybe we would be  
best served by breaking at this point until one  
hour from the present. Ten minutes to 1:00, no  
later than 1 o'clock if necessary. I expect to push  
on then this afternoon to completion. We will  
adjourn until ten minutes to 1:00.

(Whereupon, at 11:50 a luncheon  
recess was taken, following which the proceedings  
were resumed.)

7/1/1

(Raoul R. Cardenas, Jr.)

1444

AFTERNOON SESSION

1:00 P.M.

MR. DICKERSON: O.K. Ladies and gentlemen.

Dr. Cardenas, if you'll return to the witness stand?

RAOUL R. CARDENAS, JR.,  
having been previously duly sworn as a witness  
in behalf of the objectant Kipp, resumed and  
testified further as follows:

MR. DICKERSON: Mr. Alexander or  
Mr. Weber, or both? I'm sorry, Mr. Vazzana, do  
you wish to examine?

CROSS-EXAMINATION

BY MR. VAZZANA:

Q. Professor, do I understand that this report which  
you made does not refer to Heritage Hills in a  
sense that you made no study of Heritage Hills  
and their property, is that right?

A. That is true.

Q. So what you're testifying to is to the -- that

portion of that property, Sun Enterprises, is that right?

A. That's -- that's true and the bordering areas along there.

Q. And the bordering --

A. Primarily concerned with the Sun Enterprises.

Q. Now, your background, Professor, and our relationship, and I say this, that you've made studies of water systems in the area, is that right?

A. That is true.

Q. Now, the report which you submitted would be generally true, is that right, for any waters within this area?

A. The -- the results of this examination are typical for waters of this area.

MR. VAZZANA: That's all.

MR. DICKERSON: Mr. Manna?

BY MR. VAZZANA:

Q. And that would include the waters on the property of Heritage Hills, is that right?

A. That would apply to the waters of Heritage Hills.

BY MR. MANNA:

Q. Sir, may I ask generally, how familiar are you with this overall project? Have you seen detailed plans or

have you read any of the submissions that the applicant has provided?

A. I've not read any detailed plans. I did not know that there were any. I have examined, cursorily I might add, the Waste Water Facilities Report submitted by Nebolsine, Toth, McPhee Associates.

MR. DICKERSON: That's Exhibit 21?

THE WITNESS: Exhibit 21.

Q. That's the only thing that you have seen?

A. Yes.

Q. You have not seen a preliminary biological baseline survey report prepared by biological consultants under the direction of Dr. Emanuel V. Sorge?

A. I did not, no.

Q. You did not?

A. I have read the summary or the reference to it in the Nebolsine report by Mr. McPhee.

Q. All right. Several things --

MR. FLORENCE: May I also just parenthetically for the record indicate that that is not in evidence?

MR. DICKERSON: Noted.

BY MR. MANNA:

Q. Several aspects of this project appear to have been overlooked in your report. Are you aware --

MR. FLORENCE: What report do you refer to?

MR. MANNA: Excuse me, of Exhibit --

THE WITNESS: 51?

MR. MANNA: 51, yes.

MR. FLORENCE: Overlooks what?

MR. MANNA: O.K.

MR. DICKERSON: A little louder.

MR. FLORENCE: I don't want to interrupt but if you're going to refer to Sorge, it's nothing that has any relation to the question.

MR. MANNA: No, I'm saying several aspects of this report overloook some project details.

MR. FLORENCE: O.K. Go ahead.

BY MR. MANNA:

Q. Are you aware of the fact that the proposed waste water facility will have to meet intermittent stream standards?

A. I'm not aware of that specifically. No one has ever delineated that for me.

Q. O.K.

A. I would analytically at least reflect and say yes.

Q. Very briefly, if I may read from Exhibit 21, Appendix A, "Effluent quality shall conform to the following concentrations: DO, 7 milligrams per liter or greater; free ammonia, 2 milligrams per liter; 5-day BOD, 5 milligrams per liter or less." Those latter two are less.

A. I saw that. I looked at that and was, frankly, wondering whether this system could deliver 2 milligrams per liter or less of ammonia was my own personal query.

Q. O.K. That ties in nicely with my second question.

Apparently you are not aware that the applicant has agreed or is pursuing a course to remove phosphorus from this?

A. I've heard this verbally that he is entertaining the notion or perhaps has already undertaken this, the removal of phosphorus.

Q. This has been testified to in this --

A. O.K. Now, the levels I'm not aware of. That I don't know.

Q. O.K. Well, I'm not trying to get into details right now. I'm also going to ask if you are familiar

with the proposed recycling waste water. This would take the treated effluent and use it for irrigating the golf course.

A. I've heard of that.

Q. You've heard of it?

A. I've not seen it, though, not read it.

MR. FLORENCE: The objection is only to this extent that I don't think there's any -- my recollection of the direct testimony is that it was being considered, is not part of any plan and to that extent and with that qualification, certainly I wouldn't object to any further inquiry on the subject.

BY MR. MANNA:

Q. I'm not saying that it definitely is the case. I'm saying that it is under consideration. I'm asking generally if you are aware of this.

A. I've been verbally -- someone along the course of the line of discussion has mentioned it to me and I am verbally aware.

Q. In view of the standards that will be applied and you keep in mind that the plant will have to meet these standards, and in view of the phosphorus

removal, and I realize that this is going to be rather vague or ambiguous, the possible impact of the recycling, would your report change greatly or would you --

A. What do you mean by "the impact of the recycling"? I'm not sure that I understand that.

(Continued on page 1451)

BY MR. MANNA: (Continuing)

Q. Well, O.K. Let's forget the recycling for now.

In view of the fact that the tertiary -- or excuse me, withdraw that -- the nutrient removal of at least phosphorus, you know, will be required and in view of the fact -- well, as I said, of these applicable standards, would these in any way change the outcome of your report? Would they -- obviously, you're not discharging secondary effluent with nutrients and the fact that -- oh, excuse me, the fact that reaeration will be necessary to achieve or possibly be necessary to achieve a 7 milligrams per liter D O, would these likely -- would these be likely to reduce the problems with chlorides and nutrient loading?

A. I don't know that there is any problem with chlorides. It would affect the problem of nutrient loading only insofar as phosphorus is concerned. This is very much a function of how much phosphorus is removed. How much phosphorus is removed is dependent on how much you're willing to spend for removal and for treatment. Removal of phosphorus is like this and you're talking about an exponential

economic end of it, that the more you remove the more it costs.

Q. Right.

A. It's easy to remove the first 60 or 70 percent.

Q. I realize --

A. As far as nitrogen is concerned, there are two aspects to this. There will be a little bit of nitrogen taken up by the microbes in terms of their synthesis, in terms of -- I mean a small part. The bulk of it will end up either nitrified or as nitrate, in which case it still serves as food for any microbe downstream or it ends up as ammonia, in which case it can exert a dissolved oxygen demand or it can be toxic and two parts per million is quite high with regard to nutrient. Usually we're talking about the nutrient levels at a bloom potential level of about .2, .3 milligrams per liter. If this is diluted 50-50, you're still talking one part per million ammonia which is fairly high.

Q. I'm not prepared really to get into a nitty-gritty discussion of this. However, what I'm getting at is the fact that you were not aware of the fact that the intermittent standards and the phosphorus

removal at the time you wrote your report, is that correct?

A. No, not in a -- in a defined way. I was aware of it but verbally.

Q. Aware of it being considered anyway?

A. I would call it hearsay at best, yes.

Q. O.K.

A. Yeah.

Q. You've already said that you're not familiar with the Sorge report, the biological report. To take this reasoning one step further, Heritage Hills is proposing a pond in a stream on their site. Now, for what it's worth, I offer that or I suggest that the -- one of the findings of the Sorge study suggested that a stabilization pond sequence on the stream bed could serve to adequately improve upon existing water quality. May I just generally ask for your comments with regard to --

MR. FLORENCE: May I ask the question for you in a different form that won't be objectionable to me and might not be objectionable to anybody else?

MR. VAZZANA: Let's see.

MR. DICKERSON: I think you're trying to get a hypothetical question out.

MR. MANNA: Yes, I am.

MR. FLORENCE: Hypothetically, without referring to any other report, ask a question, hypothetically would a pond in a stream improve --

MR. MANNA: O.K.

MR. FLORENCE: Don't give it any dignity.

BY MR. MANNA:

Q. Let's have a hypothetical situation. Is it likely that a pond, an in-stream pond on the Brown Brook on the property of Heritage Group, will serve as a stabilization pond and might that stabilization pond effectively improve the water quality, the effluent quality, downstream of that pond?

A. Let me answer it this way: The --

MR. DICKERSON: Answer it and we'll all jump on it.

THE WITNESS: O.K., and all jump me.

MR. FLORENCE: No, no.

MR. DICKERSON: Refine the question.

THE WITNESS: If you impose, build a

pond up there, build an impoundment area up there and hold it, it will improve the quality of the water that you put into that pond but the water that will be coming out of the pond will still have some nutrients, will still have especially nutrients and will still have some hydraulic effect on the receiving stream.

MR. FLORENCE: May I respectfully object in that, as I understand the scheme of the development above, and I think I do, that the pond would be upstream from the proposed location of the sewage treatment facility and that, therefore, there wouldn't, as far as I know, there wouldn't be a pumping into any pond of any outflow from any sewage plant.

MR. BLASI: That was not the question that was asked by Mr. Manna at all.

MR. FLORENCE: He said --

MR. BLASI: Something you've interjected.

MR. DICKERSON: Mr. Manna did get a couple little zingers, if I may, in the last three words of his question.

THE WITNESS: Let me ask you if you're talking about --

MR. DICKERSON: I think the simplest answer, unless you want to pick it apart, since we're pretty much aware of the actual geography or the proposed geography of this project, that upon consideration, Dr. Cardenas' answer will stand to cover the intent of the question.

MR. FLORENCE: No sense --

MR. DICKERSON: Now, to refine the issue, you did sort of hint at the tail end of your question that the effluent was going into the pond.

MR. MANNA: No, excuse me, I said that the effluent from the pond --

MR. DICKERSON: O.K.

MR. MANNA: Effluent being the opposite of influent, not sewage effluent.

THE WITNESS: Let me clarify the question.

MR. DICKERSON: I'll let Dr. Cardenas as an expert witness go.

THE WITNESS: You're talking about just hypothetically, you're talking about taking

the Brown Brook up on the Heritage Hills property, ponding it and not having any effluent discharge into this pond, is that what you're saying?

MR. MANNA: Correct, I'm saying --

THE WITNESS: Then --

BY MR. MANNA:

Q. I'm saying take a pond in a stream, I'm asking you how this might serve as a stabilization pond and what it might do to improve the water quality of the effluent from that pond, from the pond? I'm not speaking of treated sewage effluent.

A. It would, if it were properly managed, if it were properly managed it would probably improve. You would have to manage it properly and it would have to be intelligently done. You could just -- could just serve as a settling basin and a weed catcher and a catch basin for any surface nutrient runoff, give you a weed problem, join a troph of other eutrophic systems around here. Probably the -- on the whole, if the flow remains adequate which is -- in the stream, it may not remain adequate, it would probably improve the quality of the water.

Qualifications there though.

Q. May I -- yes. I understand we're posing this hypothetically anyway.

A. Because the water, as I saw it coming into the Kipp property, that is across Highway 202, the waters were enriched, they had high levels of enrichment. They had already, without any discharge, without any effluent, without anything, they've already got elevated nitrogen and elevated phosphorus and there is already a dissolved oxygen demand.

Q. What would constitute an effective managing of a pond of this nature, what steps would have to be taken to --

A. I think there would be certain engineering aspects to it. It would have to be probably scooped out properly in a hydraulic sense and the flows would be at a certain level to maintain the scour, to prevent accumulation of materials along the bank. Probably there would have to be some weed management, might have to be some contouring.

BY MR. MANNA:

Q. In your studies, if we may leave this area right now, in your studies of water quality was any consideration given to the deposition of silts and sediment?

A. We did not put it in the report. We certainly were aware, in fact the water quality data shows that a great deal of siltage occurs probably as a result of the construction activities upstream. This certainly affects productivity, affects over-accumulation of bottom sediment. It certainly is a very important factor. We assume by everyone that is a temporary thing.

Q. May I ask what procedures you used in determining the amount and the time periods, if I may, of these depositions?

A. We did not determine the amount. We did, -- by that I mean we did not do a time survey of 24-hour examination or a weekly or so on. All of this is grab samplings. We did solid studies, you will see the total solids data very much related to this. You will see the data dealing with visibility which are also involved here and turbidity. Those

three parameters generally describe colloidal suspension and characteristics of the siltage.

Q. I was speaking of sediment already deposited, already on the bottom.

A. We did not take any corings. We did not examine the bottom sediment, no.

Q. Did you feel that it was not necessary or beyond the scope of your retainer?

A. Not that it was beyond the scope, we were already overloaded and on a very short term. It simply was beyond the immediate laboratory capabilities that I had and manpower. I was already over-extended. I had to work my fellows on Sunday and Monday and that's no way to live.

Q. From your own observations without really having tested for this specifically, did you observe any deposits of silts or sediment that you felt were recent deposits, recent within the last six months?

A. Yes, I did. In fact I saw the effects of a rainfall, hours earlier -- overnight or a few hours earlier -- in the pond, just north of Firemen's Pond, quite apparent. It was surface runoff, it was turbid, a red, different color from the receiving stream. The pond

was quite cloudy, murky and if it were allowed to settle as the samples did, you could see quite obviously the effects of surface runoff.

Q. What was the pattern of this deposition, did it appear as a delta?

A. I did not characterize -- I could see the mainstream, the main thrust of the stream coming from the culvert under the bridge into the pond on Dr. Port's property. I saw that it was very obvious. I did not see any delta but I could see very obvious effects of this new input. It was visible.

Q. From your observations, I had suggested within the last six months, could you possibly put this into the proper perspective in a time sequence, is what I'm getting at.

A. Without corings, it would not be possible. I would have to go out there and get the pipes and drive them in and take some corings and push them out and observe the soil that came from upstream. I did not do it.

Q. O.K. Thank you. May I ask how you would characterize the Kipp pond or pond "X" as we have referred to it? You have already referred to it as being mildly eutrophic.

A. Yes.

Q. Would there be any other terms that would apply?

Would you consider it meromictic? Or holomictic?

A. I am unfamiliar with the characterization you are using.

Q. I don't believe that applies. I am just offering that as another limnological term.

A. I don't know what you mean.

Q. Meromictic would be the chemical situation where it would not turn over.

A. This particular lake was not a stratified lake.

I think the temperature shows it was pretty uniform.

Q. What have you found to be the average depth of this?

A. We didn't look for the average depth. Where we took a sample, we took a depth. We did not survey the pond for depth. I think we came up with one reading of 15 feet. I am told that it's deeper in other places.

We did not seek out the main channel and so on.

Q. How would you explain the low dissolved oxygen results that you got on several bottom samples from that pond?

A. I would characterize it by reflecting the presence of enriched organic substrata that contains bacteria

where light cannot penetrate and algae and subsequent metabolic end product, oxygen, is not held and where you have a demand and bacterial growth, you will have a dissolved oxygen depletion and the driving force is the oxygen going into the bugs and you will have the deficit which is quite apparent. That is the characterization of most mildly eutrophic lakes.

Q. If I may just pursue this definition of mildly eutrophic. How do you relate this mildly eutrophic to oligotrophic or mesotrophic? How far along is the eutrophic process?

A. It's impossible to say without having a geologic history -- well, not a geologic history, a history over a time sequence of the lake itself to follow the progression. But based on top-bottom dissolved oxygen levels which some people use for defining levels of enrichment, Rutner is one that uses that, Hutchinson is another; top-bottom dissolved oxygen values for lakes, for ponds, are usually supersaturated at the surface and at the bottom there is a deficit. I have seen it go down to zero. Some of the lakes around here are typically that way. I am talking about a 15-foot lake, 20-foot, 30-foot lake and

so on.

This does not go down to zero. It is low, but it does not go down to zero and it is not supersaturated at the surface. We are also talking about thrusting into the framework levels of nitrogen and phosphorus. Again I use as a reference point the bloom potential, phosphorus, nitrogen and phosphorus work as Sawyer has used and as has been picked up by the people and is used as a general guideline.

I did not have time to apply any of the data, the data itself, the approach that's used by Volenviter or any of the newer lake people.

Q. With respect to this eutrophication, have you attempted to determine the major sources of nutrients in this basin and would you say that it is basically a natural eutrophication or a cultural?

A. I have not tried to trace the sources of nitrogen and phosphorus. Obviously it comes from upstream, across the road. Basically, this is a man-made lake, man-enlarged. It's a natural process that's going on in the lake but obviously man has had a hand in it.

Q. It has been accelerated by man?

A. Yes, and as most lakes around here, will be accelerated more so.

Q. Did you prepare the Sorge report or did you have any hand in the soils portion of your report in which you stated -- you talked about the recharge from this area? May I ask how exactly Pond "X" is fed? Is it a lateral recharging or are the wetlands located on an overburden above the aquifer or does the pond extend into the aquifer?

A. I do not know; that portion of the report was prepared by Dr. Gidlund.

Q. With respect to the dissolved oxygen readings being at a less than saturated value, would you say this is primarily the result of the approaching eutrophic state of nutrient loading or would you say it might possibly be linked to other physical criteria?

A. I am not sure of what the cause of it is. Obviously if there is a deficit of oxygen it is due to some imbalance between oxygen-producing, like algae or surface re-aeration and demand by bacteria, specifically or heterotrophic microbes and organic consuming microbes and I think it's in response essentially

to some organic enrichment. Either that or perhaps nitrification in that stream. There is high nitrate values already and this is a slow-moving system, obviously rich, I would say, looking at the values I would say that it's nitrifying.

Q. That's the latter part, that is what I was getting at. To what extent would you say that geomorphology and slope and these other factors are causing or bringing about these low DO's. You would place this above or below the other biological conditions or the nutrient loading?

A. I would have to say it's a combination of both. The nutrient loading, if it brings in ammonia coupled with the geologic conditions, if you wish, or the fact that this is a lowland, a wetland, a flatland, with very low flow serves as an ideal retention basin for nitrifying microbes, bacteria. They are much more active when they are fixed than they are when they are flocculant and this favors that type of activity. I have seen slow rivers nitrify very rapidly, very quickly.

Q. But you couldn't assign a relative importance to --

A. (Interrupting) I could not, no.

Q. With respect to your studies that you have performed, I see they are all chemical and physical studies basically. Did anyone attempt to identify the various --

A. (Interrupting) We did not do any detailed microbiology. We simply didn't have time. Again the time constraints caught up with us. It takes a man several days to do this, a variety of samples, the type of thing you are holding in your left arm there.

Q. You are not concerned in this case with these physical tests, with the biological tests?

A. Only the bacteria, and bacteria is a substantial portion of that system.

Q. Coliform tests you mean?

A. Coliform, yes, sir, and total standard plate count and includes all bacteria, all heterotrophic, mesophilic bacteria.

MR. MANNA: O.K., sir, thank you.

(Continued on page 1468)

9/1/1

(Raoul R. Cardenas, Jr.)

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MR. DICKERSON: Mr. Alexander?

MR. ALEXANDER: I think Mr. Weber would like to ask a few questions in the line of clarification.

MR. WEBER: Mr. Weber really wouldn't like to ask the questions, but I think I've been elected.

MR. DICKERSON: Mr. Weber, your smile belies your words.

MR. WEBER: I feel in an awkward position because these gentlemen that belong to this group all were my professors in graduate school at one time, sir. That and the fact I'm not an attorney, I don't know how to ask questions.

MR. DICKERSON: My next comment that I'm tempted to utter, I'd better not, that turnabout is fair play. O.K.

BY MR. WEBER:

Q. You indicated earlier that you were not or you only have a general verbal indication that the plant is being designed, the proposed plant is being designed to meet intermittent stream standards and that you have some verbal awareness that phosphate removal

is being, or at least being discussed at this stage for this proposed plant. Were you aware that reaeration is also proposed?

A. I was told that reaeration is also proposed.

Q. And I'm not sure that I got your answer before when Mr. Manna was asking questions but would your knowledge now of the fact that the plant is being designed to meet intermittent stream standards, is providing for phosphate removal and reaeration, affect your comments relative to the effect of the treated effluent on the brook.

A. Generally, no.

Q. You indicated in Mr. Manna's questioning that Pond "X" is in a state of moderate eutrophication. Would you expect that this is what you would find in almost any body of water in this general area?

A. That's a fair statement.

Q. On a hypothetical basis, purely hypothetical, would you -- how would you feel in relation to the discharge of a treated waste water effluent of the type proposed for this project being discharged to a stream under similar eutrophication conditions? Would you say that you would not discharge it to

this stream, that you would or you would do it with some conditional treatment or --

A. I'll have to qualify the answer. I've been involved in environmental questions before and I am interested in protecting certain environmental features of a terrain. This happens to be a wetland and at this point and at this moment I'm interested in protecting wetlands. I believe they could discharge to a stream without a wetland and if that particular stream did not nitrify at the discharge point, I would have no objection to it. ✓

Q. You indicated in your earlier testimony that the discharge for treated waste to this stream would have an adverse effect on the stream. Couldn't we say that any discharge of any treated waste or, for that matter, almost any waters other than natural flows would have some adverse effect on a stream?

A. Yes, they would have positive and negative. There would be some adverse effect; if you dug around long enough you could come up with an adverse effect.

Q. I've got another question that follows that. I've

just got to find it. Could you place some degree of adverse effect on that?

A. I cannot without a prolonged study. I need to do -- need to examine the quality of the stream throughout the year and match it against the proposed discharge character.

Q. O.K.

A. And the biologic -- the biology of the system.

Q. I think you may have answered this question earlier but let me ask it anyway: Do you have any feel for the rate of increase in eutrophication that might occur if the waste water effluent is discharged where it's proposed?

A. At this point in time, no.

Q. I'm asking these questions to clarify some things in my own thinking because I've got to make some decisions with regard to these projects and I'd like to have a few or a little better feel for it or some more feel for it anyway. You indicated in your report and in your earlier testimony, I believe, that the proposed waste water discharge to Brown Brook would have an effect on the ground waters

downstream. What effect would this be?

A. I'm basing my response now on my discussions with respect that the waste water will get to the ground water discharge and the basic element will be raising the levels of probably nitrate. The other effect that you would see, this waste water stream does not remove it, if it's going to remove phosphate, if it doesn't remove phosphate some of the phosphorus will probably end up there, although it's removed probably well but I guess the principal effect would be one of nitrified ammonia, nitrate.

Q. That's what I thought you were going to say, just wanted to make sure. Were there any determinations made by your group as to whether or not nitrates or phosphates were the limiting nutrient with respect to the eutrophication in Brown Brook?

A. No, there was not. ✓

Q. You indicated in your discussion of the results of your study that the waste water discharge to the stream would negatively affect the wetlands. I assume that you're referring to the effect of the nutrients on the eutrophication in the wetlands,

is that correct?

A. Yes, basically. We shouldn't use the word "eutrophication" there, probably the term "weed growth," or "local microbial growth." I'm not sure that the term "eutrophication" logically applies to wetlands, usually refers to an enclosed area, enclosed water system, but it would lead to its enrichment. It would lead to microbial problems in terms of those that are stimulated by the nutrients and it would lead to weed problems, problems with weeds.

MR. WEBER: I have no further questions.

MR. DICKERSON: Thank you, Mr. Weber.

Mrs. Saia, do you have any questions of this witness?

(Mrs. Saia shakes head in the negative.)

MR. DICKERSON: Mrs. Port?

MRS. PORT: No.

MR. DICKERSON: Mr. Oehler?

MR. OEHLER: No.

MR. DICKERSON: Mr. Blasi.

MR. BLASI: I'm going to make a statement at this time, Mr. Examiner, if I may with your permission.

MR. DICKERSON: I have several questions of the witness.

MR. BLASI: Oh, you have questions? Then I will defer to you.

MR. DICKERSON: As is my practice I like to keep them last. If you have a statement --

MR. BLASI: I would prefer that you ask your questions.

MR. DICKERSON: If you have a statement rather than questions --

MR. BLASI: I have some statements that I would like to make but I would prefer if you ask your questions.

9/2/1

(Raoul R. Cardenas, Jr.)

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MR. DICKERSON: Mr. Cardenas, samples 16 and 17 are sample types as shown in Exhibit 51. Where were they taken, were they on the stream?

THE WITNESS: 16 and 17, they were taken somewhere in the text it will explain No. 16. Now, these were taken after the last sampling batch was made and 16 is -- these are up the Brown Brook north of 202. 16 is on Table 1 essentially where they are indicated. It's sample No. 21, and 20 and 21 are 16 and 17. The numbers got kind of fouled up there a little bit because we went back and did it again. We already had that typed.

MR. DICKERSON: They were in the brook proper?

THE WITNESS: Yes, the structures along here, Gate 2 along the brook, Gate 1 behind that brook.

MR. DICKERSON: They were taken in the stream.

THE WITNESS: Yes.

MR. DICKERSON: That's what I want to clarify. Did you find any evidence of algal activity in any of the water bodies you mentioned,

blooms, or --

THE WITNESS: Yes, I did. I did see algal activity in the -- well, if we refer to the drawing, the most obvious effects of algal activity were at the upper end of 10-A.

MR. DICKERSON: That's the lower --

THE WITNESS: Southern pond, lower pond.

MR. DICKERSON: By the dam at the Cricket Restaurant?

THE WITNESS: Yes, that's right.

Firemen's Pond had floating scums and looked like it was in a state of bloom and we did not do any quantitation on it, and the upper portion of their sample point 8 is also.

MR. DICKERSON: You stated that you didn't have any definite information other than hearsay in one measurement on the depth of the pond "X", the large water body, is that correct?

THE WITNESS: We made depth measurement but we did not --

MR. DICKERSON: One measurement?

THE WITNESS: We made several measurements there but we did not probe it for the deepest

point or try to make it --

MR. DICKERSON: What were the deepest depths that you did make?

THE WITNESS: I think 15 feet was the deepest that we made and that is on Table --

MR. DICKERSON: If it's in the tables, I'll get to it. I did not have a document in front of me all during the testimony.

THE WITNESS: Depth, you would have to refer to Table 2 where there is depth in meters. Table 3 will have the same thing, depth in meters.

MR. DICKERSON: O.K.

THE WITNESS: It will give you a range. There's one depth I will spot offhand here, six meters.

MR. DICKERSON: You mentioned that Brown Brook would discharge to Pond "X". I would like a little clarification on that. You mean that in times --

THE WITNESS: If I said that, I did not intentionally mean it. What, in fact, I feel is that there is a -- the Brown Brook as it leaves the Firemen's Pond goes into a wetlands, meanders.

It is delimited during dry weather flow and restricted to a closer channel but during wet weather flow and damp flow it exceeds its bounds and flows towards Pond "X" and at that point at the surface flow it reaches it quickly, I'm sure, over to Pond "X".

MR. DICKERSON: In cases of stream flow it would reach it quite quickly?

THE WITNESS: Yes.

MR. DICKERSON: All right. Would you characterize Brown Brook as an influent or an effluent stream; would you care to describe that?

THE WITNESS: Influent or effluent?

MR. DICKERSON: Contributing to the pond.

THE WITNESS: To Pond "X"?

MR. DICKERSON: To ground water.

THE WITNESS: I don't know; I would have to refer that to Professor Gidlund.

MR. DICKERSON: I was trying to take that in with this discharge to Pond "X" but I think you've covered it. You mentioned that the waters entering the pond are, say, at the areas above 202,

north or upstream of 202, were already enriched?

THE WITNESS: Yes.

MR. DICKERSON: Would you comment on why you made that statement or give me a reference in the tables?

THE WITNESS: Yes, in the data, looking at the data I found high bacterial levels, if you'll look at the standard plate count, the fecal coliforms and total coliforms, they are most luxuriant in terms of bacterial numbers.

MR. DICKERSON: Are there any immediate sources of pollution in the vicinity of that pond or anything that you figure contributed to that?

THE WITNESS: I did not see anything immediate. I am told that there are septic tanks there and hip-shooting it, I would say that the course of construction activities leads to a great deal of shedding of nutrients and bacteria, soil bacteria, to a receiving stream. I would feel that at this point this is the case.

MR. DICKERSON: Would this contribute the fecal coliforms?

THE WITNESS: Fecal coliforms, I am not sure that it would. I could not answer that positively. I would say perhaps from either other animals that are approaching humans, I don't know what that means.

MR. DICKERSON: We'll take it --

THE WITNESS: Septic tanks, something like this. The fecals were there.

MR. DICKERSON: O.K.

THE WITNESS: You will find when you begin to get elevated total coliform you usually look and you'll find some fecal. They do not always come from the human gut.

MR. DICKERSON: Could they possibly have come from ducks?

THE WITNESS: Could have come from ducks, if there are any ducks around.

MR. DICKERSON: Did you observe any ducks in the pond?

THE WITNESS: That day I did not. I am told there are ducks.

MR. DICKERSON: Thank you.

THE WITNESS: Or they may have been

there and I didn't see them.

MR. DICKERSON: Did you observe any other possible sources of sediment contributions to the stream other than on the property of Heritage Hills?

THE WITNESS: No, I did not. With a rainfall there would be, of course, but I did not observe it.

MR. DICKERSON: The reason, I just want to clear up the fine point of words, you made some comment that the sediment was entering the pond above 202 and then you made -- I think you clarified that by saying it came from upstream and then said across the road.

THE WITNESS: Yes, I think there's two roads there. There's a "T" and what I mean is Dr. Portner's pond?

MR. DICKERSON: This has been referred to as the Port-Saia pond.

THE WITNESS: Port-Saia pond.

MR. DICKERSON: That's the pond immediately north of the Firemen's Pond?

THE WITNESS: Immediately north of the

Fireman's Pond there is a culvert that comes in from across the road and that road is Warren Street is it? That's where that turbidity was coming from that I saw, red-colored water and the obvious effect of that silt.

MR. DICKERSON: Just two general questions: Do you normally find an oxygen imbalance in most streams in the natural course of events? By this, I mean at something slightly less than full saturation as a normal event, would you tend to expect 100 percent saturation of oxygen?

THE WITNESS: Unless it's a pristine pure trout stream, I would not.

MR. DICKERSON: All right, and you mentioned weed problems in the wetlands. Would you care to characterize either the wetland or what you meant by or amplify what you meant by weed problems in the wetland?

THE WITNESS: Well, the weed problems that I refer to would be -- would be wetlands are going to have weeds. Wetlands are going to have a lot of weed growth, a lot of algal growths, in fact. What I mean there is that essentially this is already

in existence and it also occurs on the borders of the pond "X" and with additional nutrients you would increase this tendency.

MR. DICKERSON: Would you characterize these wetlands as typical marshes?

THE WITNESS: Yes, I would.

MR. DICKERSON: Thank you. I'm going to reserve Mr. Blasi's statement. Are you going to have redirect?

MR. FLORENCE: A few redirect.

MR. DICKERSON: Well, in that case, do you want to make your statement, Mr. Blasi, or if you wish to cross-examine, I'll do it that way.

MR. BLASI: I have no objection to Mr. Florence asking questions providing, except my continuing objection. Let's be fair about it. I object to him asking any questions of this witness.

MR. DICKERSON: All right, sir.

MR. FLORENCE: I understand. I would ask first that these -- Mr. Dickerson, that you take, I guess, judicial notice of Section 701.3,

Title 6 of the Conservation Law which sets out

the classifications and standards governing the quality and purity of waters as it relates to the Brown Brook, in comparison with the findings of the -- the expert witnesses.

MR. DICKERSON: I'll take judicial notice of Part 700 and Part 701 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York.

REDIRECT EXAMINATION

BY MR. FLORENCE:

Q. Dr. Cardenas, can you make an opinion as to the depth of the Brown Brook by comparison of the temperatures of the samples that you have taken there?

A. Well, let's see here. If we -- samples 1 through -- sample sites 1 through -- with the exception of 6 and 7 which are the upper pond, it -- the temperature increases. Sample point No. 1 I'm looking at the 23rd of September, it starts at 15.2, 14.8, say 15 degrees. Then it goes up to 15.9 and by the time it's through the pond or around the pond, it's up to 18.5 which essentially reflects -- and then it drops down again. It essentially reflects a

shallow stream which would heat up quicker, cool off quicker, too.

MR. FLORENCE: I don't have any other questions.

MR. DICKERSON: Any further questions of this witness?

(There was no response.)

MR. DICKERSON: Dr. Cardenas, you're excused. Thank you.

(Whereupon the witness was excused.)

MR. DICKERSON: Mr. Blasi.

MR. BLASI: Mr. Examiner, you have heard the continuing objection of the applicant with respect to the testimony of this witness and the presentation of this witness on this application.

We, once again, refer to the notice of the hearing.

We refer to the delineations as you, Mr. Examiner, have set forth, as to the purpose and scope of

this hearing. It is our position in the first

instance that none of this testimony should have

been taken or presented and that -- and I say this

most respectfully -- it has put this applicant

in a most disadvantageous position because the things

that have been allowed and permitted into this record which go beyond the scope, in our opinion, and the purpose of this meeting which has been noticed by the Department of Environmental Conservation.

With that objection and preserving that objection, I move to strike out in toto the entire testimony of this last witness, Dr. Cardenas. I also move to strike out in toto, because obviously among other reasons, the report as submitted is replete with errors. It has been characterized by this witness and by his co-witness, the former witness, as having been prepared in short order under emergency conditions with many factors and many facts wholly not referred to which are essential to such a type of report. But once again when I make that comment, I make it always preserving the general, and continuing, objections we have made because we filed an application for a water supply and in connection with that, there was a question of some added items because of separate applications that were filed, as you know, Mr. Hearing Officer, the dam and the relocation of the stream and the

construction, the actual physical construction of the outfall. This was the scope of this hearing and we do not wish this testimony or any other testimony which is offered beyond the scope of the hearing to be prejudicial to this applicant in pursuing any further proceedings before the Department of Environmental Conservation, particularly in the plans, drawings, specifications and the entire future of this project and Mr. Florence made it very clear that he did not oppose nor did his client oppose this project. This is a statement that's in the record.

MR. FLORENCE: That's correct.

MR. BLASI: I can say that; Mr. Florence made it very clear that the only thing that he objected to and he recognized the situation with respect to the state of the law. He made it very clear that the only thing he objected to was at the outfall or that the treated or renovated water was coming into his client's -- presumably into his client's property by the connection that has been described. Under these circumstances, and I say this again with due respect to you, Mr.

Hearing Officer, because of your patience and understanding throughout this entire matter, these hearings have been prolonged way beyond the scope, way beyond the intention and then suddenly at the last minute there's been an attempt here to turn it into something which, very frankly, in our opinion, it should not be and might very well redound to our prejudice. So I have made the motions and I object to any of the testimony, to the report or any part of it. I want that on the record clearly understood.

MR. DICKERSON: Your statement is on the record. Your motion is denied.

MR. FLORENCE: I have only two statements which are unsworn and I offer them for whatever their value would be, one in relation to the Sun Enterprises property. I'll submit them and as a courtesy to my worthy adversary, Mr. Blasi, in this case I will proffer them to him assuming I can find them.

MR. BLASI: Are these unsworn statements?

MR. FLORENCE: Yes, they are, and they

are simply --

MR. BLASI: By whom?

MR. FLORENCE: One is by the  
Sportsmen's Club and another one by the school.  
Here is the other.

(The documents were offered to  
Mr. Blasi.)

MR. DICKERSON: Why don't we go off  
the record for a minute.

(Discussion off the record.)

(Continued on page 1490)

MR. DICKERSON: All right, ladies and gentlemen, we will resume.

MR. FLORENCE: Mr. Dickerson, I offer a letter from the Central School District, Town of Somers to Mr. Kipp in relation to the use of the wetlands by the students of the school. I also offer the unsworn letter of the President of the Somers Sportsmens Association in relation to their use of the parcel of Sun Enterprises.

MR. DICKERSON: Mr. Florence has offered a letter dated October 5, 1973 addressed to whom it may concern, on the letterhead of the Somers Sportsmens Association, Inc. A letter on the letterhead of the Central School District Number 1, Town of Somers, dated June 1, 1970, addressed to Mr. Lyman Kipp, as unsworn statements. Do you have any objection?

MR. BLASI: I do. They have no relevancy, no competency, no materiality whatsoever. Don't relate to this hearing as such.

MR. DICKERSON: I think I just will summarize them as being statements for the concern for the preservation of Brown Brook, at

least on behalf of the Sportsmens Association and the letter from the School District appears to be a thank you letter to Mr. Kipp for the use of his pond area by the students of the school district.

Even within the broadened allowances to become parties in interest in this proceeding, I cannot regard either one of these organizations as parties to this proceeding based on what we have gone through so far. Mr. Florence, I am going to sustain the objection.

MR. FLORENCE: Respectfully  
except.

MR. DICKERSON: Exception noted.

Mr. Oehler, come on up and sit down for a minute, Mr. Oehler. Before we do, if I dare, Exhibit 47 --

MR. FLORENCE: Did I offer that?

MR. DICKERSON: No.

MR. FLORENCE: Well, I offer it.

MR. BLASI: I'm going to object to it and let you rule on it.

MR. FLORENCE: Well let me say this in relation to what the testimony has been as

to what Mr. Kelly observed under oath, I certainly don't offer it for the memoranda that is surrounding the photographs.

MR. DICKERSON: I will note for the record that there appears to be a contradiction in the labeling between 47-A and 47-B. It appears to be -- I'd have to study it in a lot greater detail. With respect to Mr. Blasi's expression for what it's worth, I'll stick it in the file. I don't want to use any further phrase on that.

Exhibit 51, whoever has it right now --

MR. FLORENCE: This is it.

MR. BLASI: I'm objecting to its introduction, you know that.

MR. DICKERSON: Yes, sir.

MR. BLASI: And I do not have a copy of it.

MR. DICKERSON: Off the record.

(Discussion off the record.)

MR. DICKERSON: Let's go back on the record. You have offered Exhibit 51?

MR. FLORENCE: Yes.

MR. DICKERSON: You have your continuing objection on the entire testimony?

MR. BLASI: Yes.

MR. DICKERSON: With the comment insofar as the material in there pertains to stream protection applications, and the determination the department makes on those applications in accordance with law, Exhibit 51 will be received into evidence for what it's worth. We have two other exhibits that have been marked for identification which have not been received in evidence. They are Exhibits 11 and 12.

And as a final housekeeping thing, bear with me, Mr. Oehler, before I forget it, I am going to take judicial notice of the New York State geologic map, 1970 edition, published by the New York State Museum and Science Service of the New York State Department of Education for the purpose of tying the exhibit we have on the soils to the bedrock geology as known, for the evaluation of the water supply source.

I think that covers the housekeeping chores.

Mr. Oehler, do you wish to give a sworn or unsworn statement?

MR. OEHLER: Sworn.

RICHARD OEHLER,  
having been called as a witness on his own behalf,  
after first having been duly sworn was examined  
and testified as follows:

MR. DICKERSON: Please be seated.

State your name and address.

MR. OEHLER: Richard Oehler, Bonny  
Drive, Somers.

MR. DICKERSON: Since you have no  
one asking you questions I will be glad to help you  
but I think it might be best if you proceed with  
a narrative statement.

MR. OEHLER: Sure. I have been a  
resident of the Town of Somers for three years.  
During that time I have attended almost all meetings  
of the Town Board, the Planning Board, the Zoning  
Board and all public hearings.

Professionally, I am a mathematician  
employed by IBM Corporation and have done graduate  
work in mathematics, in computer science at the

University of Maryland, Catholic University. I am currently a consultant to the Department of Defense in Washington, D. C. in mathematics computer science.

My point is that I have professional qualifications as a scientist, as an observer of scientific data. As hobbies I have gardening, home greenhouse and I do a lot of walking, a lot of hiking.

Now, I guess I should make one other observation. I also have a pond on my property, a pond, in fact, that flows into this Stone House Pond.

My concern throughout the hearing has been with the water district concerned with just where the water is coming from and the size of the area. I believe it has been established by previous testimony that the aquifer that's been identified on Exhibit 23 with a red line, in fact terminates some point before the intersection with Route 100 and 116 and that no studies have been made of that aquifer as it extends beyond the bounds of that property either to the north along Route 100 or

across towards Stone House Pond and, for the record, I just wanted to make a few observations as someone who lives in that area and knows something about the history of that area.

Now, unfortunately, I have not been able to obtain documents because I can't take them out of the places they are located, that define what this area looked like 200 years ago. I feel that maybe you would even object to my testimony, but let me give it anyway.

That Route 100 didn't exist, that the area from the intersection of 116 and Route 100 down to the Crane House or the Chisholm House, that is the Stone House we referred to, we referred to it as the Stone House, was in fact a swamp or at least the northern end of it.

Route 100, as a matter of fact, there was no road in that area, that route -- to get to Croton Falls, one had to go out 116 out down Dean's Bridge Road and then down a road called Old Croton Falls Road. The point I'm making, if you get into that area down by the Stone House one sees that Route 100 is in fact on a raised roadbed.

It's been filled and I don't know when it was constructed. If one can imagine what that area looked like without Route 100 there, one would be in fact a swamp which extends in a very natural fashion, that is without appreciable change in level across that area, around the Stone House Pond.

I have done some digging in that area, as I said, I lived in that area, I removed wild trees in the swamps and wild bushes. The soil is heavy clay, characteristic, as has been pointed out, of a swampy area on top, clay overburden and perhaps even an aquifer underneath.

My guess is that the natural galactic actions in that area are such that there was a valley created all the way down from that aquifer where it is now identified through and underneath the Stone House Pond. I don't know where it terminates, but the whole area in there is clay in a basin with rock outcroppings on either side.

I have some questions about the extent of the aquifer to the north along what is now Route 100. If one looks at the topography in

that area, the Stone House is built on a slight rise and immediately to the north of it is another swamp and that swamp extends all the way up to a brook that comes out of the Croton Falls Reservoir and flows into the Muscoot Reservoir. I have no idea, as I said, of anything about that, what aquifer is in there.

Now a couple of observations.

Again, this is just my talking to people, nothing more than that and in some cases checking records; most of the development in that area centered in low spots, most of the homes are built on swampy area. Almost all the homes in that northern section north of Granite House are in swamp. All have shallow wells, all the homes that I stopped in. I stopped at a half-a-dozen homes in that area. I have facts about how many homes are in this area, later on; visual observations.

The question that I was not able to answer and I was not able to get Mr. McPhee to answer was the extent of the aquifer. I still raise that as a question.

There is a pond on the current

property. If one can imagine what that pond looked like, there was some testimony that was given that that pond was created by a dirt road and a culvert. I believe one of Mr. Florence's witnesses testified to that yesterday. It was his assumption that the pond was created that way.

There is on the property of Heritage Hills an ice pond and from talking to people that lived there a long time, ice was taken from that pond. That pond was much larger than it now is. The water apparently, it was potable in the sense the people took the ice and took it for cooling drinking water. That ice pond in fact still stands.

On the other hand, on the other side of the pond the other side of Route 100 and in the Stone House Pond, there is an extreme condition of algae bloom. One can question whether or not I know the extreme condition of algae bloom. Let me tell you I have a pond that also blooms and I can recognize what has happened. I have had experts tell me what it was and I can recognize what has happened to this pond.

The pond is fed by several streams.

The streams run through, typically, run through the back of people's property, septic field. My septic fields, for instance, my neighbors on either side of the street, all in one way or another extend to the bounds of that stream. The septic fields themselves for the most part are in good condition. That is, after a heavy rain, one cannot smell the septic smells, on the other hand, there have been cases that have been taken care of but there have been cases in the past where in fact that occurs today.

My point is that aquifer in my mind extends below Route 100 to the other side. I don't know what the flow of water is in the aquifer, I don't know whether the aquifer itself is higher underneath the Stone House area than it is in the area where they are pumping water from.

The question is about the purity of that water in the long run. I want to make a point about the Stone House Pond. That pond is used for recreation. Land on that pond is owned by the Stone House Association. It is used for summer recreation and winter recreation. I wonder

(Card Oehler)

1500-A

about land subsistence, if that's the right word.

That is, when water is mined, will a depression develop, will the land characteristics change?

I don't know what the answer is to that, but it's an interesting question.

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MR. OEHLER: (Continuing) O.K.

Mr. Blasi, in previous testimony, indicated that there are now no plans for the development of the area around this aquifer, no -- none of his plans. I have with me a copy of the master plan that shows that area. In fact, if you want, I can testify that it's a change from the current zoning. The current zoning is one acre and the master plan calls for that area to be developed -- this is a master plan prepared for the Town of Somers and accepted by the Planning Board of the Town of Somers, by Clark Associates.

MR. BLASI: I think you have to get the statement of what I said and it's not testimony. What I said is that the applicant had no present plans for that application. I also stated that on the master plan it had been indicated as commercial and Mr. McPhee, I think, made some reference in his Water Report to the possibility of having to supply water to that area.

MR. OEHLER: Yes.

MR. BLASI: That's all I said.

MR. DICKERSON: You want this marked

as an exhibit or do you want to keep it or what?

MR. OEHLER: If it's of interest to you, you can have it.

MR. DICKERSON: It's up to you.

MR. OEHLER: I'd submit it as an exhibit, yes.

MR. BLASI: I have no objection to it.

MR. FLORENCE: Hate to see him throw three bucks out. I think we can probably both agree that the master plan referred to, some of that property that Mr. Oehler refers to as an area for community shopping but that's a master plan as I recall it and only as I recall it, and Mr. Blasi may remember more definitively, that it's R-1-40, one acre per family residence in the area right now.

MR. BLASI: It's a master plan, future thinking, future guidance, not a law.

MR. FLORENCE: Yes.

MR. BLASI: Right.

MR. FLORENCE: Yes.

MR. BLASI: That's all it is.

MR. FLORENCE: All I'm saying to you

is --

MR. DICKERSON: The point is obvious. Sorry to interrupt you.

MR. OEHLER: That's O.K. The point I was simply making is that some percentage of that land will be developed and is developable. At some future time that may have an effect on the recharge of that aquifer at least as far as it relates to the area adjacent to the Hills.

There was some question about the previous use of that property. Obviously it was used as a gravel operation. Gravel was mined from the area. I, too, have walked the property and found evidence of debris, lumber, oil cans, paint cans, in a small area, about two such piles on the surface.

I simply would like to point out that Mr. Adams has operated many gravel operations in this town. In fact, one very close to my home in Dean's Pond and that it was his practice at that time to bury lots of things like cars and washing machines and so on. I've seen --

MR. FLORENCE: And Mrs. Adams.

MR. OEHLER: Mrs. Adams. I have no evidence at all of what he's done in that particular piece of property other than what's on the surface, and I found two such piles.

O.K. I asked the question about roads. How many or how much road is required to put a primary access road through that property? It's part of the master plan and I believe it was on one of the earlier exhibits. I've walked the road; it's about three-quarters of a mile. I assume that what I call a road which is now a gravel cut in the side of the hill, will in fact be blacktopped and that will be the real bounds of that road. It's three-quarters of a mile of road but there's approximately a half a mile of Route 100 that goes through the aquifer that the town does, in fact, use salt and sand and so on in the winter to clean those roads.

O.K. I wanted to point out the number of homes that exist in the immediate area around there. Most of this information was obtained from two different sources -- three different sources. One was to approach the homeowners'

associations in the area, Summit Lake and the Stone House Association. Number two was visual count of houses constructed on streets. Number three was looking at the assessment rolls. There are on top of Summit Hill or Mountain, I point that out, this is the property immediately to the north of the aquifer, this mountain here (indicating).

MR. DICKERSON: Use a -- we've run out of colors. We'll use a ball point pen to --

THE WITNESS: Yes, sir.

MR. DICKERSON: On Exhibit 23, a circle has been drawn with hatching on the inside of the circle to surround a representation on the topographic map of a hill or elevated land body that Mr. Oehler has just referred to. This is --

MR. OEHLER: Summit, Summit Hill.

MR. DICKERSON: This circle will be labeled "Summit Hill" for identification. Let's go off the record for a second.

(Discussion off the record.)

MR. DICKERSON: O.K., back on the record. Exhibit 23 has been circled as previously

indicated with a ball point pen and hatcher marks in the area has been labeled "Summit Hill" for identification and within this area, Mr. Oehler?

MR. OEHLER: Within the area of that hill, there are two separate developments: Summit Lake Estates which has 51 building lots and 49 homes, and Green Tree Estates, a much newer development, which has 25 building lots and 7 or 8 homes in it, one of the houses unconstructed.

MR. DICKERSON: I -- can I have those numbers again, please?

MR. OEHLER: Yes, 25.

MR. DICKERSON: 25?

MR. OEHLER: 25 approved lots.

MR. DICKERSON: And --

MR. OEHLER: Seven or eight homes that houses are under construction.

I went to the -- as I said, to the Summit Lake Homeowners' Association to find out about problems they've had previously with water. All of the homes have deep rock wells. The deepest well that I found that these people knew about was 450 feet. Unfortunately, before we could validate

any of that, the well dried up and they had to drill a new well. The second well was at 185 feet, so I don't have any record of what the deepest well is up there. I point out, though, that if one looks at the elevation lines that are on this map, I think it's been established that the aquifer is at 220 if I'm not mistaken, 224.

MR. DICKERSON: You mean the --

MR. MC PHEE: The elevation?

MR. OEHLER: Elevation of the aquifer.

MR. MC PHEE: I don't think we ever got into the elevation of the aquifer.

MR. DICKERSON: That's ground surface on this map.

MR. MC PHEE: Ground surface is around 220.

MR. OEHLER: Right. And the height on Summit Hill approaches 400 feet so that, in fact, wells on top of that hill do go below the surface of the aquifer.

I don't know anything about the wells in Green Tree. There's only two houses or three houses that are lived in at the moment. On

Stone Hill -- on Stone Hill which is immediately north of the Stone House Pond --

MR. DICKERSON: And as underlying the letter "C" that has already been used to designate the classification of the lower reaches of Question Mark Brook.

MR. OEHLER: There are 33 houses in that area and I was not able to ascertain the depth of any -- the deepest well. The deepest I could find, and that was a survey of five or six houses, were over 200 feet but that's all. On the other hand, people remember Stone Hill as a difficult place to find water. Can we go off the record for a minute?

MR. DICKERSON: Off the record.

(Discussion off the record.)

MR. DICKERSON: Exhibit 23 has a second area marked lightly in ball point pen. The area is approximately triangular as outlined by the old Croton Falls Road, Dean's Bridge Road and an unnamed road on the map which you have referred to as --

MR. OEHLER: Susan --

MR. DICKERSON: Susan Road?

MR. OEHLER: Drive.

MR. DICKERSON: Drive, and in that area, sir?

MR. OEHLER: O.K. On Old Croton Falls Road, there are nine houses. On Dean's Bridge Road there are twelve. On Bonny Drive there are eight and on Susan Drive there are nineteen. In that -- in that area, most of my knowledge is derived from Bonny Drive where I live, and my well is 180 feet and immediately to the south of me the well is 165 and on Dean's Bridge Road, Bonny Drive, the well is less than a hundred feet. To the north of me, however, the wells are deeper. They go over 200 feet. Again I point out with looking at the elevations on that map that the depth of those wells is below the level of that aquifer.

Now, there was some question about the degree of -- changing the subject altogether, there's some question about the degree of the ice or non-ice during the time the wells were being pumped, if you remember. My pond is within a

half a mile uphill from the pond on the Adams property. My pond was frozen in late November. It was skateable in early December. By "skateable" I mean four inches of ice. Unfortunately, it thawed and it thawed during the Christmas holidays and I remember very distinctly because I have a green house and had a great deal of problem with the sun and heat during that time. On the first of January the temperature went above 50 degrees. On the other hand, the pond re-froze after the third of January and was skateable again the 15th of January. I don't know what the condition of their pond was but it seems to me to have been frozen before and after, perhaps even during some of their testing.

One of the concerns I have as a -- as a resident of the town, and I believe this was pointed out by Mr. Muenzinger if I have his name correct, from the Department of Water Control from Westchester County -- or Planning, indicated that the strategy should be to develop all possible water sources and ground water sources.

MR. BLASI: Ground water.

MR. OEHLER: Ground water, that's correct, before we tried to tap into the reservoir system, and the point I would --

MR. BLASI: Excuse me, I don't think that was exactly the testimony.

MR. DICKERSON: Well, there were two opening statements. Mr. Dineen encouraged ground water development and Mr. Muenzinger, if I may refresh myself, had some question about -- expressed a concern about the amount of ground water recharge versus the amount of ground water being produced. That summarizes his position.

MR. BLASI: But generally, as I remember, concurred with the concept of Mr. Dineen if I recall it correctly.

MR. OEHLER: I, too, concur with the concept for what it's worth of Mr. Dineen that we should, in fact, develop our ground water resources.

Now, I heard testimony today. I've observed the property before and let me say I have no relation to work for Mr. Kipp in any way, but Mr. Kipp does, in my estimation, from what I have observed and heard, have ground water source

and I would like someone to be concerned about the overall picture of this area for ground water sources and it may be outside the scope of this hearing and I would like to know who it is if, in fact, it is outside the scope of the hearing, I'd like to argue my case on that point.

MR. DICKERSON: Just like to note for the record that the particular scope and the aspect here is the application before us for this development of a ground water source.

The intent of the Water Resources Act in that area would be to protect the water resources of the State. To my knowledge and from the records of the Department, we have not approved any other public water supply or allocated any water resources for a public water supply in the vicinity of Somers or the immediate vicinity of this project.

MR. OEHLER: I stand on the statement of Mr. Dineen.

MR. DICKERSON: O.K.

(Continued on page 1513)

MR. OEHLER: Two more points and then I'm done. One, a serious concern I have is for the -- in fact if the stream is relocated as such that it no longer flows through that pond, what will become of the pond? I believe that's on the plan that the stream goes directly through to the Firemen's Pond and bypasses the other pond.

MR. BLASI: No.

MR. OEHLER: That's not true? I'm not sure about that.

MR. BLASI: The relocation, if I may interject, would help that situation, not hurt it.

MR. OEHLER: O.K., my mistake. Now, the last point; pond management and here again I think I have some experience in that area. To maintain a pond, now, my pond does not have any development in the immediate area. There has been no development for some years now and yet I continually get sand from the roads from the sanding operation in the winter and I get all kinds of natural debris, the leaves, twigs, grass, whatever, flowing in and building up over a period of time

and in order to alleviate some of that situation, when the ponds were built, this series of three ponds, drain plugs were installed to lower the water, to lower the water by three or four feet. This enables me to get at the sides of the pond and clean out the muck from the sides of the pond.

I feel that in a similar situation that the pond created by the dam, that one of the purposes of that drain plug is to in fact allow the cleaning of the pond. Now the problem that does exist when that occurs is I have to be very careful about when I do it. I do it in the spring and I do it in the fall and I do not do it in the summer. This summer we have had very very little rainfall. This summer, from mid-July on, the streams basically stopped flowing. My stream, I would argue, is that -- the stream through my pond is at the same flow, approximately same flow as the Question Mark Brook and in previous testimony it was indicated that the Question Mark Brook is a lot like the Brown Brook in terms of flow. I have no measurements on that.

If, in fact, the pond is drained

during the summer, it takes a long time to fill up.

By a long time I mean the next available rain and that may be two months. So my point is it's not the mean -- we had a lot of talk about the mean of filling up the pond, whether it was 24 hours or four hours. Rather, it's the variance and in that case I point out that the variance is several months in particular times of the year and during that time I would want to -- I would want someone to be concerned about the effects on the downstream and downstream ponds.

That's really all of my testimony.

I have one more comment and I have nothing else to say after that. That is, I made this point before, I think, that I don't know how important it is, numbers and figures that were used for population basis derived from Heritage Village where the minimum age was 52, 50. In Heritage Hills, the minimum age is now 40. In order to use those numbers, one has to look at the population base. There are figures available for United States. I do not have at my disposal figures for the metropolitan New York area where I assume both

Heritage Hills or Heritage Village draws their population from, but if you did, I would point out that based on 1970 census for the United States, there is a different mix in population between the age group 40 and the age group 50.

MR. BLASI: But the base is always 18, you know that, about the children. No children under 18.

MR. OEHLER: Yes. I mean to refer specifically to the number of living parents and so on is different at age 40 than it is at age 50.

O.K., I'm finished.

MR. DICKERSON: Not quite. First I presume that your discussion about the ice pond and the aquifer, you mean to say glacial events rather than galactic.

MR. OEHLER: Yes, that's right.

Thank you.

MR. DICKERSON: I think that scope would be a little too broad. Any questions of this witness.

MR. FLORENCE: You refer to the predecessor owner, Adams, of the land, you refer

to the predecessor owner of the parcels.

MR. OEHLER: That's correct.

MR. DICKERSON: All right. Any other questions?

MR. VAZZANA: No questions.

MR. DICKERSON: All right.

Mr. Oehler, do you wish to make any closing statement of an unsworn nature or let your statement --

MR. OEHLER: No.

MR. DICKERSON: All right. You wish to let your remarks stand.

MR. OEHLER: Yes.

MR. DICKERSON: All right. Mrs. Port, any closing words or remarks for us?

MRS. PORT: No.

MR. DICKERSON: I presume that is to say your previous statements will stand.

MRS. PORT: Yes.

MR. DICKERSON: Mr. Alexander or Mr. Weber, do you have any closing statements?

MR. ALEXANDER: No closing statements.

I think the record is complete. We would like the chance to see the record. I know there was some

talk earlier about filing memoranda possibly.

MR. DICKERSON: I will handle that, yes.

MR. ALEXANDER: Anything we might have we will reserve until that time.

MR. DICKERSON: O.K. Mr. Florence, do you have any closing remarks or some restatement?

MR. FLORENCE: It's my understanding that in lieu of closing remarks that we would submit a memorandum incorporating those matters which we felt were important for your consideration together with whatever rules or regulations or laws that we felt would be appropriate to mention in that memorandum and I would stick by that on the condition that the applicant would also do likewise.

MR. DICKERSON: Mr. Vazzano, do you have any closing statements at this time? We are going to have a formal request for the filing of memoranda and I will get to that. Do you have any closing remarks or statements you wish to make on the record at this time?

MR. VAZZANA: No. I think we have probably covered it. We have got over 2,000 pages

of testimony. Certainly the Hearing Officer knows what is required here. We can't go beyond whatever is in the testimony, what is on the record and there is nothing further I can say. I certainly am not going to take that one-and-a-half hours. I did say this, that there is some talk about a memorandum. The Department would like to reserve its rights to submit a memorandum based of course upon the testimony which was presented. We will not go beyond the record.

MR. DICKERSON: O.K. Mr. Blasi, you have the second last word.

MR. BLASI: We have discussed the memorandum, sir. The applicant joins with other parties in requesting that that method be used in this matter and today I believe is the 10th of October 1973 and I would like you sir, if you will, to fix a date, the earliest possible convenience to you, for the delivery to you of such memoranda. We would like it at the earliest possible moment.

MR. DICKERSON: I will close out our business with the following comments: First of all, I would very sincerely express my appreciation to

the parties present for the progress that we have made and the manner we have made it, under some very trying and some very complex situations. Secondly, I will upon receipt of the memorandum, I will set a date for that in a moment, prepare a summary of the stenographic minutes, the information contained in all of the exhibits which now numbers some 49 exhibits, 51 for identification and 49 for real, if I may phrase it that way, and make some evaluations and recommendations to the Commissioner and he or his authorized deputies will render the decision in this matter.

The law says that such decision will be rendered within 90 days of the close of the hearing. As a matter of practical situation, my boss does not like 90 days. He would like it much sooner. I know Mr. Blasi and his clients are very anxious to get some word on this project and at least from the point of interest I'm sure the other parties will also. Because of the voluminous nature of the record I will make no promises. It would be my earnest hope barring any great problems to have it out in 30 days or less or at least in the Commissioner's

office by that point.

As for the memorandum, I will entertain and receive statements, memoranda, briefs, as you will call them, written documents, on a one-shot or a one-time basis. These may contain closing statements, material for emphasis, essentially I am going to leave it open as to what it contains.

I will only make the comment that fresh or new material, not viewpoints, but new material that is not subject to cross-examination cannot equitably be considered in fairness to all parties in arriving at the recommendations and decisions.

If somebody has a new interpretation or wishes to make a comment on it, that's all right, but as far as new data or anything else I would prefer that it would be in accordance with the records and minutes. They should be in writing. They should be in my hands or in my office in my absence by the close of business which is 4:45 p.m. on October 19th and they may be mailed to me or to the Department of Environmental Conservation,

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Office of Hearing Officers, Room 612, Albany,  
New York 12201, to my attention or they may be  
hand delivered, however you want to get them there.

In order to facilitate insofar as  
possible equal access to at least the record, I'm  
going to leave one set as typed with today's  
transcript to be added to it with the Town Clerk  
until the afternoon of October 19, at which time  
the documents will be returned to Albany. There  
will be a copy in the regional office of the  
Department at New Paltz and the third set will be  
in the Office of Hearing Officers in Albany along  
with all of the exhibits.

The decision on the water supply  
application will be in accordance with the  
statutory determinations, public necessity, whether  
the plans provide for the proper protection of the  
supply or for the proper treatment thereof, whether  
they are just and equitable to other municipalities  
affected thereby and to the inhabitants thereof,  
particular consideration being given to their  
present and future necessities for sources of water  
supply and whether they make fair and equitable

provisions for the determinations and payment of any and all legal damages to persons and property, both direct and indirect, which will result from the execution of the plans. I make the comment that I made earlier, that the courts have reserved onto themselves the right to determine the damages. We can make no findings as to damages.

And as regarding the construction of the dam, the relocation of the stream and the construction of the sewage effluent discharge structure, whether these plans would adversely affect the health, safety and welfare of the people of the state or the natural resources thereof.

We have the power to approve or deny these applications or to modify these applications by the imposition of conditions. These are the options open to us.

Again I would personally like to thank you for your co-operation as we have had it to get through what would have been a rip-roaring hearing. We have managed to proceed with some decorum. I truly appreciate this. The hearing and record and proceedings will be closed on the close

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of business on October 19th, 1973 and with that stipulation the hearing stands adjourned subject to the Commissioner's decision. Thank you.

(Whereupon, at 3:10 P.M. the hearing was concluded.)

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<u>Witnesses:</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
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E X H I B I T S

		<u>For Id.</u>	<u>Evid.</u>
No. 50	Resumé, Raoul R. Cardenas, Jr.	1404	1405
No. 51	Report, Environmental Assessment Associates	1407	1493
No. 11			1493
No. 12			1493



STATE OF NEW YORK )

COUNTY OF ALBANY )

PAULINE E. WILLIMAN, being duly sworn, deposes and says: That she is a Certified Shorthand Reporter licensed by the University of the State of New York under permanent certificate number 297 issued May 21, 1949; that she acted as the official reporter at public hearings conducted by the New York State Department of Environmental Conservation at Somers, New York, on September 17, 18 and 19; October 2, 3, 4, 5, 9 and 10, 1973, in the matter of the application of Henry Paparazzo and Curtis McGann (HERITAGE HILLS) for the acquisition of a source of water supply, etc.; that she recorded the proceedings personally and with assistance under her direct supervision; that the transcripts to which this affidavit is annexed is an accurate and complete record of all the proceedings at the times and dates noted above to the best of deponent's knowledge and belief.

Pauline E. Williman

Sworn to before me this  
11th day of October, 1973.

Patricia Payne, Notary Public  
Commission expires March 30, 1975

THOMAS P. FOLEY



